Vol. IX TORONTO, SEPTEMBER, 1919 No. 9

The Canadian Medical Association Journal

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The Canadian
Medical Association Journal

Vol. IX. TORONTO, SEPTEMBER, 1919 No. 9

LAENNEC—ONE HUNDRED YEARS AFTER

ADDRESS IN MEDICINE

By William S. Thayer, M.D.

Baltimore

AT the outset, let me tell you how deeply I appreciate the honour that you have done me in inviting me to address you—with what happiness and satisfaction I appear before an audience of Canadians. That broader sense of patriotism which links us all to the Mother Country which is as much mine as yours, has suffered much in the five years that have passed. But despite the noisy discord of ephemeral politics, that which has happened has, I think, drawn closer about us the bonds of a common ideal and a common inheritance which we cannot and would not escape; and the aureole that to-day surrounds Canada in the eyes of every American who deserves the name, can never fade.

"μέγα δὲ μέρος ἡγεῦαι τῆς τέχνης εἶναι τὸ δύνασθαι σκοπέιν"

"The power to explore is to my mind a great part of the art."

—Hippocr. epid. III.

These words appear on the title page of Laennec's "*Traité d'auscultation mediate*," which appeared just an hundred years ago. It is fitting for more reasons than one that we pause on this notable anniversary and consider, for a moment, the man and his work, for there are lessons therein which we may well take to heart. Réné-Théophile-Hyacinthe Laennec was born on the 17th of February, 1781, in a stone house which fronted on the charming q ıai that

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Delivered before the Canadian Medical Association, Quebec, June 26th, 1919.

borders the little port of Quimper in the Department of Finisterre in Bretagne.

His father, Théophile-Marie Laennec, was a light and airy personage—a lawyer by profession, a courtier by nature, a furious framer of mediocre verse, through which he curried favour with the great and the fair, an indefatigable office-seeker, a prolific professor of lofty and exemplary sentiments and advice of which he himself was a sufficiently poor exemplar; a futile but withal an entertaining person—a singularly anomalous and ill-chosen father, however, for a serious and distinguished son.

Laennec had two uncles, one, Michel, a prelate, who died an émigré; the other, Guillaume-François Laennec de la Renardais, a physician of Nantes, to whom Laennec owed much. His mother, Michelle Gabrielle Félicité Guesdon, of Quimper, of whom little is known, was an Angevine by descent, and came from a family of some literary distinction; she died five years after his birth.

After his mother's death, Théophile was sent with his brother by his happy-go-lucky father first to his uncle Michel at Elliant, and a year later, on the latter's removal to Tréguier, to his uncle Guillaume at Nantes. Guillaume Laennec was a fine and sturdy character, a graduate in medicine at Montpellier, who had studied previously in Paris, and with John Hunter in London. He was at this time rector of the University of Nantes. The two boys were taken into his house and cared for as members of his own family. For Théophile especially his uncle grew to have a deep and lasting affection, which was manifested throughout his life. Laennec's early instruction was gained at *L'Institut Tardivel* and the *Collège de l'Oratoire*, which, for the year '91-'92, was under the vigorous direction of no less a personage than le P. Fouché de Rougerolles, then on the threshold of his eventful career. In August, '92, he gained the accessits of two prizes of honour, and a first prize in composition—French translation.

At this time, to the dismay of his uncle, Théophile was already writing verse. In these days when the air is rent with protests at the burden and the waste of time involved in the acquisition of a smattering of Latin by our boys who are to pursue a career requiring knowledge of the natural sciences, it is not uninteresting to read (Rouxeau) a charming metrical translation of the first eclogue of Virgil, written by a boy under twelve years of age.

But rhyming was not his only distraction; he appears to have been a boy in every sense.

The Revolution followed its course. The guillotine was set

up in the square under the Laennecs' very windows. Uncle Guillaume became a surgeon in the army. But Théophile tranquilly pursued his studies, and graduated in 1795. At about this time, his father married for a second time, Geneviève-Alice-Julie Urvoy de St. Bédan, the widow of an émigré. Renouncing the temptation to which he almost surrendered, to join the engineers, Théophile began the study of medicine at *L'Hôtel Dieu* of Nantes.

Here, actively engaged in the lesser duties of military surgery, he became deeply interested in natural history in all forms, roaming about the country and devoting himself to his collections. He had also developed an enthusiasm for Greek, to which he gave special attention. Alert, active, ambitious, he was filled with the desire to perfect himself in various arts and graces, such as riding, dancing, music—studies, the pursuit of which was difficult with the scant means afforded by his scatter-brained parent.

In 1798, he passed through a severe illness, which may well have been a typhoid fever.

In the insurrection of 1800, Théophile took part in the military expedition of General Grigny in le Morbihan. While stationed at Vannes and at Redon, he composed a long poem, humorously describing the expedition. This was supposed to be the product of an ancient Celtic bard, Cardoe, translated after years of effort, by its discoverer, Cenneal (Laennec), and was entitled "*La Guerre des Venêtes.*" On his return, Laennec entered the military hospital as an army surgeon of the third class.

At this time his uncle had long been struggling to induce the recalcitrant father to supply the funds necessary to enable the boy to pursue his studies in Paris, but it was not until April, 1801, that Théophile joined his brother "Michaud" at 947 rue St. Dominique d'Enfer, and entered the *Ecole spéciale de Santé*, as the *Ecole de Médecine* was then known. The two main schools of clinical medicine in those days were that of Corvisart at the Unité (Charité) and that of Pinel at the Salpêtrière. Under Corvisart, Laennec began his studies. It was a fortunate choice. Corvisart had a well-organized clinic where (Rouxeau) "each morning in groups the students were trained in the examination of patients, while the observation was completed wherever it was possible, by those careful and methodical necroscopical examinations, the taste for which Corvisart contributed so much toward spreading in France." Here Théophile found himself thrown with Bayle, for whom he developed early a warm attachment.

From the outset, Laennec was a marked student, and was soon

made a member of the *Société d'instruction médicale.* At twenty he was an accomplished student of English, German, Latin and Greek, and beside following the clinic at the Charité, and the last inspiring course of Bichât, on pathological anatomy, he found time to attempt to perfect his Greek at the *Ecole Centrale des Quatre Nations.* In 1801, he was also admitted to the *Ecole pratique,* where he studied under Duméril, Chaussier, Fourcroy, Deyeux, Hallé, Pinel, Bourdier, Peyrilhe, Richard, LeClerc, and Cabanis. He also worked with Dupuytren, in his studies in pathological anatomy.

From the outset Laennec kept careful and detailed notes of all his observations and lessons, and among his papers is an interesting shorthand record of the celebrated debate in connection with Bayle's inaugural thesis.

His first medical communication was published in the *Journal de médecine de chirurgie et de pharmacologie"* for June, 1802, entitled, "*Observation sur une maladie du cœur, ossification de la valvule mitrale, dilatation du ventricule droit, avec affection de la poumon et du plêvre gauche.*" A month or two later, Laennec published an analysis of Bell's work on gonorrhœa and venereal disease, and in the same year, an account of a group of cases of peritonitis. This last publication marks an epoch in medical history, setting forth clearly and sharply the clinical and anatomical features of the disease touched upon by Bichât, but as yet unrecognized clinically. This remarkable work was the beginning of a series of contributions, anatomical and clinical, which have been equalled by few men in the annals of medicine.

At the time his labours were especially devoted to the study of normal and pathological anatomy. In association with Bayle, he began to work with Dupuytren on his treatise of pathological anatomy—work which was soon to be broken off, owing to misunderstandings with the former. From this time on his publications were frequent and important. In February, 1903, there appeared a "*Note sur une capsule synoviale située entre l'apophyse acromion et l'humérus*", the discovery and accurate description of the subdeltoid bursa, the surgical importance of which has been recognized in such recent days.

A little after this he described the fibrous capsule of various abdominal organs, especially that of the liver, which was as yet unknown as distinct from the peritoneum. In the distribution of prizes to the "*Ecoles spéciales de Paris,*" in September, 1803, Laennec obtained the first prize in surgery, and shared the first prize in

medicine with Billerey. Later, at the *Concours* of the *Ecole pratique*, the announcement of his candidacy had so disturbing an effect in preventing others from coming forward, that at the special request of his instructors, he withdrew his name, and took a position "*hors de concours*". Already his success was so great that he started a small course in pathological anatomy on his own account, and determined to write a treatise upon the subject.

A member, at its inception, of the *Société anatomique*, he was a constant contributor, his most important communication being his "*Mémoire sur les vers vésiculaires*," etc.

As ever, the careless father was negligent in providing for the industrious son, and Laennec's work was associated with constant worry as to matters of finance. But finally, in 1804, he was able to pass his examinations and present his thesis, which was entitled, "*Propositions sur la doctrine d'Hippocrate rélativement à la médecine pratique.*" In this interesting document, Laennec showed his familiarity with the Hippocratic writings, which, happy man, he read more or less fluently in the original. The thesis is replete with wise observations. He begins with the quotation: "Medicine is not a new science. For a long time its principles have been established and its path traced. By following these through long years, many valuable and useful discoveries have been made, and every one who, endowed with the necessary qualities, knowing that which has been done before him, starts from this point and follows the same route, will make new contributions. But he who rejects the work of his predecessors and disdaining all, pursues his studies by another route, and with another point of view, and thinks he has found something, he deceives himself and deceives others."

He points out the necessity of the proper classification of disease on a basis of pathological anatomy, of the vital importance of the study of diagnosis by careful observation and correlation, not only of the general symptoms on which prognosis depends, but of the special symptoms associated with each disease process. "The only method by which one can acquire solid knowledge in medicine depends on avoiding the adoption of any principle which is not proven by many individual facts, by studying with care the characters and the course of diseases, and by treating them according to the indications drawn from the observation of that which has succeeded in like cases. This is the method which Hippocrates asserts to have been known long before him, which he regards as the only way by which one may make real discoveries."

He ends with the words of Klein (*Interpres Clinicus*): "I

assert that medicine is free. I place myself neither with the ancients nor the moderns, and I follow the one (party) as well as the other when they cultivate the truth; yet more often, I repeat, myself, their observations." Wise advice for the day in which it was written, wise, if not taken too literally, for all time.

Théophile Laennec had already won the recognition of his masters and associates. He was made a member of the *Société de l'école de médicine* and became an editor of the *Journal de médecine*, etc. He took up the torch from the hands of the dying Bichât, and his studies of pathological anatomy were worthy of his great predecessor. The work on peritonitis was a classic both anatomically and clinically. In 1805 he published a note on pathological anatomy in which he sought to set forth a system of classification of organic changes—an interesting and valuable communication which led to a long dispute with Dupuytren. At about this time he came chiefly interested in the study of the Celtic dialect of lower Brittany, of which eventually he acquired a considerable knowledge. He published frequent critical reviews and an annual summary of the diseases prevailing in Paris—a duty which brought him into close touch with the Hôtel-Dieu and the St. Louis, as well as the Charité. But already his hard work had told upon him seriously. That which he called his "asthma" disturbed him greatly, and the rest he needed he could not take. A happy vacation of several weeks in 1805 with his cousin, Madame de Pompery, at Courcelles, near Soissons, did much to freshen and strengthen him. Rouxeau publishes a number of amusing verses and extracts from plays which Théophile seems to have written during this short vacation with surprising facility and spontaneity.

In 1808, Laennec retired from the *Journal de médicine*. He was beginning to acquire a practice of his own.

In 1809, the *Ecole de santé de Paris* became the *Faculté de médecine;* Laennec was a doctor of the new school.

In 1812, he was named Alternate Physician "médecin suppléant") at the Beaujon.

In 1814, he was at the Salpêtrière, where his knowledge of Gaelic was of the greatest help to him in caring for and consoling the young Breton conscripts, who, unable to make themselves, understood, were distressingly homesick.

He had become the great authority on pathological anatomy, and in the *Dictionnaire des sciences médicales*, he wrote on "*Anatomie pathologique, Ascarides, Cartilages accidentels, Crinon, Cucurbitains, Dégénération, Dégénérescence, Désorganization, Ditrachyséros ou*

bichorne rudy, Encéphaloïde, Fibreux, Fibro-cartilages accidentels, Filaire, Furie infernale.')

In 1816, Laennec was appointed Chief of Service at the Neckar, where he gathered about the bed-side a group of devoted students. It was here at the Neckar that his great discovery was made. Every one knows the story; how one day in 1816 he noticed boys at play in a court of the Louvre who, with the ear applied at the extremities of long pieces of wood, listened to the transmission of the sound of a pin scratch at the opposite end, how, on the following day, he rolled a notebook tightly, and placing one end against the chest of a patient, was delighted to find that he could hear the heart beats more clearly and distinctly than he had been able to hear them with the naked ear. Soon he devised his simple wooden cylinder and began his researches. It was, after all, a natural step. Up to the time of Bichât and Laennec, despite the work of Morgagni, little had been known of the pathological changes in organs. Laennec, a great observer, inbued with his new knowledge of pathological anatomy, had his eyes wide open for something more than that which percussion and inspection and mensuration could give; and the acute mind found the way.

What Laennec did with his discovery is a model for all time. In the three years that followed, he had brought before the world the characters of normal respiration and voice sounds, and their variations, with different physical changes in the constitution of the lungs as clearly as they may be taught to-day. But more than this, he had described anatomically and clinically the various forms of bronchiectasis, emphysema, pulmonary œdema and pulmonary apoplexy.

The description of pneumonia from an anatomical standpoint is almost as admirable as the demonstration of the method by which its presence could be determined clinically. Again, his description of the different forms of pulmonary tuberculosis, in ward and laboratory, the recognition of the possibility and manner of arrest of the disease, are models of acute observation and understanding. His contributions to the diagnosis of diseases of the heart are not upon the same plane, owing, doubtless, as Saintignon points out, to the circumstance that the physiological explanation of the heart sounds and their significance was at that time unknown. Starting with the false hypothesis that the second sound was auricular in origin, he never found his way out of the jungle.

This was a wonderful work for one man. How was it done? Laennec tells in his own words in the preface to his book: "When

a patient enters the hospital, a student is given the task of collecting from him what anamnestic information he can give as to his disease and of following its course. As I examine the patient myself, I dictate the principal symptoms that I observe, those, especially, which may go to establish the diagnosis or the indications as to treatment, and I give my conclusions, subject to amendment, if it be necessary, by later observations. This dictation, which is made in Latin for obvious reasons, is taken down by the pupil in charge of the patient, and, at the same time, on a separate notebook, which I call the "diagnostic sheet, which it is the special duty of another pupil to keep in order that he may hold and read it to me, if necessary, at each visit. When any new sign appears, such as may modify the first diagnosis, I add it also. If the patient dies, the protocol of the necropsy is taken by the pupil in charge of the observation. I re-read these observations before all those present at the necropsy, and if there be occasion to make any correction, I do it on the spot, and after having taken their counsel."

Laennec's visits, according to one of his pupils, Toulmouche, lasted from an hour to an hour and a half. He invited his colleagues and friends to interesting necropsies, and he always committed himself before the necropsy in the presence of all as to the changes which he expected to find. There could be no better model for study and instruction.

In May, 1818, Laennec spoke before the *Société dé l'école* on auscultation, and finally, in August, 1819, just a hundred years ago, the famous "*Traité d'auscultation médiate*" appeared. It made a great impression, and although seriously criticized by some, it was soon taken up by the world.

Laennec was small and delicate of frame. "Little Laennec," "the little Professor," his fiery adversary, Broussais, called him. But he was spirited and devoted to outdoor sports, especially to hunting, for which some of his rich patients gave him opportunities on their estates. During the winter he practiced in his apartment with an air-gun. Frail as he was, he was especially proud of his prowess in athletics of all sorts. "He was but a breath of air," says Pariset, "and he thought himself a Hercules." He was musical, and played the flute. He drew fairly well, and amused himself at other times at the turner's table. But the scant recreation that he snatched from his work was of little benefit. He burned the candle at both ends, and it is probable that he was already suffering from the malady that had carried away his master, Bichât, and his companion, Bayle. He had wounded himself during a necropsy and

developed an anatomical tubercle on his finger, which persisted, Finally, in 1820, worn out, he retired definitely, he fancied, to his beloved Kerlouarnec, in Brittany, There with his faithful companion and housekeeper, afterwards to become his wife, he lived for two years by the sea. The blessed solace of solitude, the joys of hunting and roaming about his lovely native fields, the opportunities of leisure to renew his studies of the classics and of the dialect of his people, rest and peace, gradually brought new strength, and after two years, duty called him again to Paris.

On his return, he found new and wearying tasks thrust upon him in the shape of an appointment as physician to Her Royal Highness, the Duchess de Berry, and shortly afterwards as professor of the *Faculté.*

At this time, Broussais, with his so-called physiological doctrine, held considerable sway—that strange doctrine which ascribed all the vital processes to that which he called "irritation", and all diseases to its excess or deficiency—the excess meaning inflammation, the default, debility. For him there was no essential difference between diseases, which are distinguished only by the degree of irritation and the particular *sympathy* of one organ for another. The physician must occupy himself only with the organ primarily affected, which was, in most instances, the gastro-intestinal tract. The terms "*gastro-énterité*" and "*gastrite*" played a large part in the "physiological doctrine" with which Broussais believed he had revolutionized medicine. All that had gone before could be thrown aside, and treatment was reduced to the simplest terms. It was another system like that of Hahnnemann or Brown or Gall—words —championed by a convinced, fiery, spirited, vain, intolerant advocate.

In his opening lecture at the *Collège de France,* Laennec warned against the fallacies of the new "doctrine" in a clever parable of the life and work of Paracelsus. And from this time on there was war between the clinic of Val de Grace and that of the Charité, to which Laennec had moved with his new chair—war in which the acute and well-considered criticism of Laennec easily triumphed over the fiery diatribes of the modern Paracelsus. His clinic was soon sought by physicians from all countries, eager to learn his methods. In 1823 he was made a member of the Academy of Medicine.

In 1824, he married his companion, Madame Guichard-Guégen, *veuve* Argou. In the same year he was made a Knight of the Legion of Honour.

From 1824, when the first edition of his treatise was exh austed he had been working assiduously, in addition to all his other duties, on a second edition, the form of which he had entirely changed, making the work in reality a treatise on the diseases of the heart and lungs. This was completed and published in May, 1826.

It was his last effort. The strength that he had gained in his long rest in Brittany had soon given out. His cough had increased. In April he developed fever and dyspnœa and, soon, a persistent diarrhœa. His voice grew hoarse; he became profoundly emaciated, and in June, himself unconscious of that which all others could see, he left for Kerlouarnec, where he died on August 13th. Two hours before his death, he removed his rings and laid them on the table by his bed. To the queries of his wife, he replied; "Some one else will soon have to do this for me; I would save him the trouble." He was forty-five years old.

In the ten years that had passed since his discovery of auscultation, he had brought the art of physical diagnosis of diseases of the lungs from a state of the utmost crudity almost to the point at which it remains to-day. He had done this not only through the introduction of his new method, but through the study and analysis of the changes in the organs themselves, and through the careful application to diagnosis, not only of auscultation but of all other methods then known, and by a conscientious objectivity which is a model. In his opening lecture at the Collége de France, he says that, if he presents hypotheses, "I hope to present them in such manner that one cannot attach more importance to them than do I myself, and I hope that I shall never give that which I think, that which I suppose, my point of view, my theory, in a word, for that which constitutes the true science, for *that which one knows.*"

That which Laennec had done for the lungs was later extended to the heart with the growth of our knowledge of physiology of the circulation, by Bouillaud, Hope, Stokes, Corrigan, Graves, Flint and others.

It is just one hundred years since the appearance of Laennec's book. Since then great things have happened in medicine. The advances in our knowledge of the natural sciences, the associations which attach medicine to a firm scientific basis, have increased rapidly. The developments in the domain of pathological anatomy, of bacteriology, of chemistry, of physics—to mention only the applications of electricity in exploration, and of the *x*-rays, have

given us a deeper insight into the nature of the processes of life and of disease, and have augmented our powers of control and recognition and prevention, and, happily, in some instances, our powers of relief and conquest of disease.

The refinements of diagnosis and the possibilities of treatment demand to-day an increasing mass of knowledge and experience which we struggle, often in vain, especially in the United States, to crowd into an insufficient period in our universities and schools of medicine. All the new methods of research, however clean-cut and valuable their results may be, are of use only if they are exercised by one who has mastered them by practice and experience. A new instrument of precision, a new method of surgical procedure, in the hands of the inaccurate or the inexperienced, is of no advantage; it may be misleading and harmful. Refinements of method must themselves be studied and practiced carefully. But even then they are in themselves rarely final; they are but additions to our basic armamentarium, new bricks for the edifice of diagnosis and treatment, useless if the foundation be deficient—nay, more than useless—dangerous. In the domain of diagnosis, the simple procedures of Auenbrugger and Laennec remain the basic essentials of the art. No man is fit to profit by modern refinements of diagnosis who is not experienced in the study of pathological anatomy, familiar with the changes in organs, and well trained in the fundamental methods of physical exploration, who has not gained through practice at the bed-side a skill and experience in the art of auscultation and percussion which has made him familiar with the physical manifestations of the activities of heart and lungs in health and in disease. How variable these manifestations may be in the normal subject should be known by all physicians.

"The power to explore is to my mind a great part of the art."

This familiarity, this training, this power, is to be gained only in the necropsy room and in the ward. Books cannot teach it; it cannot be learned in the lecture-room; no magic power of inheritance can transmit it. "There are," says Laennec, "some things which one can transmit well only by experience and practice; . . . however, it is precisely in these points that I count on training the students at the clinic; such are the distinctions of the various nuances of crepitant, dry and moist râles, the (distinction of) deep and superficial phenomena, . . . of the manner in which, in the most difficult and uncertain cases, in pericarditis, for example, one arrives at a definite diagnosis through comparison of the signs and by a process of exclusion."

The experiences of the last few years have made it painfully clear that a very large proportion of our American physicians, and I understand that, to a certain extent, the same is true in this country, are sadly lacking in the essential foundations of a training in diagnostic methods. In the army there is apparent a widespread tendency to reason and act precipitately and without control on information furnished by the laboratory. Physicians forget that laboratory reports are in few instances final, that their value depends in great measure on their relation to the clinical aspects of the situation—that at every point the human element comes into play, that a laboratory report from an unreliable source is worse than worthless.

It is becoming easier and easier for the physician to obtain *x*-ray plates or fluoroscopic examinations of his patients, examinations of sputa and excreta, cultures, agglutination and complement deviation tests, which come back to him as short and definite reports. Too often the *x*-ray report especially, is written so as to convey to the practitioner a sense of finality which is generally unjustified. To the physician who is not wholly familiar with the clinical aspects of the case, this is a danger—a trap into which he falls in too many instances. To him who is incapable of controlling it, an *x*-ray report is often a liability rather than a help. In the army in France the greater part of the unjustifiable diagnoses of pulmonary tuberculosis were dependent upon the blind acceptance of an *x*-ray report. The same is true in connection with many laboratory tests. I have seen the most obvious ulcerative endocarditis regarded and treated as typhoid fever because of the report from a health department of a positive typhoid agglutination test.

It is, alas, too common in private practice to meet with men who have almost abandoned the examination of the patient, and depend on the reports of consulting specialists and on laboratory tests. Not long ago, as I told my students this spring, I saw in consultation, a gentleman who was said by his physician to be suffering from cardiac disease; he feared, angina pectoris. I asked the physician what the symptoms had been. His reply was that at first *he* had thought that the patient had indigestion, but that Dr. X. had found his heart enlarged, that Dr. Y. had made a Wassermann reaction which was negative, that Dr. Somebody Else had looked into the conditions of the stomach and given the patient a test breakfast without notable result, that a differential blood-count had been made; that the urine showed no abnormalities. I asked if the patient had had pain. He had, over the heart. Did

it radiate into any other part of the body? No. Was it associated with exercise? He thought not. After a little questioning, I realized that the doctor had practically no information to give me as to the symptoms or physical signs manifested by the patient. I then spoke with the patient, and in a few minutes learned that his pains did follow exercise and eating; that they did radiate into his arms in a characteristic manner; that the history alone was such as to justify a diagnosis of angina pectoris The doctor had neglected all ordinary methods of investigation and had contented himself wholly with the reports of laboratories and experts on this, that, and the other detail. This is not to practice medicine. But, though a rather exaggerated picture, it is an example of what one met too often among younger as well as older officers in our hastily gathered together medical corps.

In one ward of one of our army hospitals in America during an epidemic of pneumonia, the Chief of Service discovered thirteen unrecognized empyemas among thirty-two patients. One hundred years after the publication of Laennec's book, the commonest event of my visits to camp hospitals in France was the discovery of unrecognized pleural effusion, pleurisy regarded as unresolved pneumonia.

Who is to blame for such conditions as this? Is it that the men who enter medicine to-day are incapable of acquiring the foundations of the art? I think not. On the contrary, in those hospitals in the United States Army where courses of instruction were instituted, it was surprising to find the avidity with which medical officers, young and old, grasped the opportunities offered, and how quickly some acquired proficiency in methods of physical examination, which, in the medical school, they had not properly been taught.

The fault lies in our methods of medical instruction, and here again I fancy that you, in Canada, have been less at fault than we. Nevertheless, I am disposed to believe that the general interest in bacteriological, serological, chemical, and the newer physical methods of exploration have in many schools led us to forget the necessity of prolonged and systematic training in laboratory, ward, and out-patient department, in pathological anatomy and in physical diagnosis in its more restricted sense, in auscultation and percussion. Training in diagnostic methods is useless if it be not preceded and accompanied by experience in the dead house. The student must be familiar with the anatomical changes in organs which he seeks to recognize in the living subject. He must follow the patient from the ward to the necropsy table. More than this, proper instruction

in auscultation and percussion demands careful supervision of the student—instruction in small groups. The student must be led to make his own discoveries, to solve his own problems—he must be directed to a proper course of reasoning. Physical diagnosis can be taught only by the bedside. Again, this early instruction in physical diagnosis should not be relegated wholly to the young instructors. One of the most important duties of the professor of medicine is to give his personal attention to the students who are for the first time approaching the patient. It is at this point in the career of the student that the wise and experienced clinician can exercise his most important and lasting influence. It is, I believe, the attempt to teach the diagnostic art didactically that is at the root of the inefficiency of so many practitioners to-day. If, at the outset, the student be encouraged to read books or to listen to discourses on diagnostic methods, he starts with a handicap of preconceived ideas which he may never overcome. Again, the necessity of familiarity with the normal is too often overlooked. No student should leave the medical school without appreciating the frequency, position and character of the sounds heard so commonly on the expansion of atelectatic borders of lungs.

No man should be allowed to enter the practice of medicine who has not, by experience, made himself familiar with the auscultation of the normal heart and with those murmurs which are the rule, rather than the exception, in young individuals, especially cardio-respiratory murmurs. If he be not familiar with the normal, he will be a poor judge of the significance of deviations from the ordinary.

"The power to explore is to my mind a great part of the art."

In epitomizing the life of a great physician, I have desired to emphasize the thought that the kernel of the art of medicine lies in the power to explore. This power is gained only by experience and by practice.

The last century has perfected the art of diagnosis in many ways. But proficiency in the basic methods of exploration which we owe to Auenbrugger and to Laennec is as vital to-day as it was an hundred years ago.

In those parts of this paper which deal with the life of Laennec, the author has drawn largely on the works of Saintignon (Saintignon, Dr. Henri: "Laennec: Sa Vie et Son Œuvre," Paris, J. B. Baillière et Fils, 19, rue Hautefeuille, 1904), and Rouxeau (Rouxeau, Alfred: "Laennec avant 1806," Paris, 1912).

SANITATION IN WAR

ADDRESS IN PUBLIC HEALTH

By John W. S. McCullough, M.D., D.P.H.,

Lieutenant-Colonel C.A.M.C.

IN every war the soldier faces two enemies; the one is the armed forces of the foe, with their terrible engines of destruction, the other the silent and in the past the far greater foe, the grim purveyor of death, disease. The history of warfare for centuries has shown that of these two enemies the latter or silent enemy causes much the greater mortality.

War Statistics.—According to Longmore's tables, giving the statistics of war, and which are based on the records of battles for the past two hundred years, the usual story has been that four men have died from disease to every one from bullets. In the Russo-Turkish war, eighty thousand men died from disease and twenty thousand from bullets. In the Crimean campaign it is stated on eminent French authority that the Allies in six months lost fifty thousand soldiers of diseases and only two thousand from casualties. In 1894, during the French campaign in Madagascar, of fourteen thousand men sent to the front, twenty-nine were killed in action and seven thousand succumbed to disease, most of which was preventable. In the Spanish-American war, in a campaign of six weeks, the deaths from war casualties were two hundred and ninety-three and those from disease three thousand six hundred and eighty-one, or nearly fourteen to one. In the Boer war, there were seven thousand one hundred and fifty-four deaths from enteric fever alone or more than from all other casualties combined.

In comparison with the foregoing figures, it is stated on the authority of the Japanese Minister of War, that in the Russo-Japanese war, from February, 1904 to May, 1905, the total deaths from casualties and wounds were fifty-two thousand, nine hundred and forty-six, or nearly 9 per cent. of the army, while the total deaths from sickness amounted to eleven thousand, nine hundred and ninety-two, or only 2 per cent. of the forces in the field.

Read at the meeting of the Canadian Medical Association, Quebec, June 26th, 1919.

The Japanese Record in Sanitation.—In the war with China the Japanese losses from disease were far greater than from casualties. That the Japanese were able ten years later to completely reverse the record as between wounds and disease is said to be due—

(1) "To thorough preparation and organization for war;

(2) To the simpler non-irritating, easily digested ration supplied to the troops, and

(3) Because of the brilliant part played by the members of the medical profession in the application of the principles of sanitation and the prevention of communicable disease in the army."

For the purposes of preparation and organization the Japanese Government sent her students all over the world to study the army systems in vogue. From the knowledge thus gained, she developed a system of her own based upon prevention rather than treatment. The medical department was organized on broad generous lines, and its representatives given the rank and power their responsibilities merited, recognizing that they had to deal with a foe which previous history showed was responsible for 80 per cent. of the mortality. Japan's medical officers were graded as high as the officers of the line who combat an enemy who is responsible for only 20 per cent. of the mortality. At home she organized the most splendid system of hospitals that had ever been devised for the care of the sick and wounded, and with the army at the front she established the most elaborate and effective system of sanitation heretofore found in connection with any army. The Japanese were the first nation to adequately recognize the true value of an army medical corps. Her students had studied the methods of the best medical schools of western civilization. These methods were adapted to the needs of the army. They saw that, in order to make their armies effective in the field, preventable diseases must be controlled. They established institutions for the study of infectious diseases, and for the manufacture of serums and vaccines necessary in the prevention of disease. They discovered the germs of lockjaw and the plague and developed a preventive treatment for these and other affections. They recognized the value of cleanliness of the body, and every soldier went into action with a clean body and clean underclothing. They had learned the lesson which, previous to the Boer war, Britain had failed to apply, viz.: that water carries disease and should be purified by boiling. The food supplied was designed to meet climatic conditions. Wounds on the battlefield were, except in emergencies, treated only by first-aid dressings. In the Japanese army, prevention to the smallest detail was carried

out. There was the most careful supervision of rations, clothing and shelter of the units. The Japanese medical officer is omnipresent. He is with the first screen of scouts testing and labelling wells so that the army to follow shall drink no polluted water. Coming to a town there ensues a thorough examination of its sanitary condition, and, if infection is found, the premises where it exists are quarantined and placed under guard. No soldiers are billeted where danger from communicable disease is found. All fever cases have the blood examined. The fruit, food and vegetables for the army use are sampled. If the food is tainted, the fruit overripe or the water polluted, they are not allowed to be used. Obedience to the order of the medical officer is absolutely respected.

In the camps the medical officer lectures to officers and men on the details of general and personal hygiene—how to cook and to eat—when not to drink or bathe. The men are even taught how to pare and clean the finger-nails. The results are seen in the figures given—*four deaths from bullets to one from disease.*

The South African War.—The report of the Royal Commission on the South African War relating to the medical service, gives the impression as remarked by the *British Medical Journal*, "that the system, like that of the rest of the army, was based on the supposition that the grim actualities of war would never have to be faced." One medical witness put it that "the medical service was overworked, undermanned and underorderlied". The Surgeon-General was supplied with a personnel to look after sixty thousand men—not enough for even that number—but instead they had to look after two hundred and fifty thousand men besides camp followers, and the work was scattered over half a continent.

Sanitation in War.—Sanitation in war is a broad subject. It is not merely, as some seem to think, a synonym for latrines, important as these are, but it practically embraces everything involving the physical welfare of the soldier. It is because of the close attention to every detail of sanitation that the incidence of disease and the mortality of the army have been so much less in this war than in any previous one.

Sanitary Methods in C.A.M.C.—The sanitary methods followed by the Canadian Army Medical Corps were practically the same as those which were found effective by the Japanese. Competent sanitary experts were placed in charge, laboratories established, lectures instituted and all medical officers were required to pass an examination in sanitation.

As soon as possible following enlistment, every man was in-

oculated against typhoid and para-typhoid, and vaccinated against smallpox. The record of inoculation and vaccination was entered on the history sheet, and in the case of inoculation this was repeated at intervals of a year or so during the campaign. Close attention was given to the quality and quantity of food and to the sterilization of dishes and other utensils, such as drinking vessels used in common. In Canadian camps these were boiled after each meal. The canteens were closely supervised and common cups eliminated as far as possible, and if any were used, they were boiled after each using. In this way we think that the occurrence of outbreaks of communicable disease, many of which are conveyed from mouth to mouth, are prevented. Provision was made for frequent and regular bathing of the men, the blankets received daily airing, and there was provision for sterilization of blankets at regular and frequent intervals. Recognizing that impure water is a cause of diseases like typhoid, dysentery, cholera and other intestinal affections, the water-supplies received the most meticulous attention. All water used was sterilized by hypochlorite or by boiling and it was the duty of the sanitary officer to see that this order was obeyed.

The army sanitarian requires plenty of ingenuity. He has to beg material from Ordnance and the Engineers. Sometimes he will get it at once, sometimes after a long interval, and often not at all. Colonel Balfour of the R.A.M.C. tells the following story:

"A New Zealand medical unit on a certain island was in need of wood for sanitary purposes. Requisition after requisition failed. Finally the officer commanding said to his quarter-master: 'I want you to indent on Ordnance for a large supply of wood to make tombstones.' 'Tombstones!' said the quarter-master; 'what do we want with tombstones?' 'Never mind,' was the answer, 'do as I tell you."

"Next day a cart laden with wood of all shapes and sizes, made its appearance. There was plenty of wood for the dead. There was none for the living."

This war has developed many improvements in the Army Medical Corps. A much-needed addition is an affiliated body of expert sanitary engineers under its control to carry out minor sanitary works which are of the greatest importance.

Some Affections Controlled by Sanitation.—With respect to some of the more important affections with which it has been the duty of sanitarians to cope with during the war, it may be said that of these perhaps the most satisfactory results have been experienced in respect to typhoid and other forms of enteric fever.

As already pointed out, this disease had heretofore been the scourge of military campaigns the well-known experience of the South African and Spanish-American wars being the latest and most typical examples of the destructiveness of this group of affections. In the absence of the protection afforded by such sanitary measures as inoculation and by the sterilization of water supplies, by the care taken of the body excretions and in the exclusion of flies, the probability is that the domestic conditions found in the various areas of war would have produced an epidemic of typhoid and paratyphoid fevers of frightful proportions in the Allied armies. The precautions taken by the sanitary service sufficed, however, to reduce the mortality from these affections to a minimum.

Cerebro-spinal fever, otherwise known as epidemic cerebro-spinal meningitis or "spotted fever", came into prominence in the early days of the war, and Canada has the doubtful honour of being popularly supposed to have transmitted the disease with its first contingent of troops to England, but as there were two hundred and seventy-two cases with one hundred and sixty-eight deaths in England and Wales in 1912, and three hundred and four with one hundred and sixty-three deaths in 1913 and an equal number in 1914, it may be safely urged that the most the Canadians had to do with the incidence of the affection in England was to contribute to the existing condition. It has been claimed by the Medical Research Committee's report that while the Canadians did not import a new disease they did introduce a virulent strain of the causative organism and were in some degree responsible for its spread This view, however, has been vigorously controverted by Adami who points out that the strain of meningococcus obtained from the Canadian cases were identical with those isolated from purely British cases. From the same authority I quote that there were in the Canadian Expeditionary Force from 1914 to 1918, three hundred and sixty-seven cases in all with one hundred and ninety-eight deaths, a mortality of 54 per cent. In the early days of the war, when medical officers were not so conversant with the symptoms of the disease and when perhaps the crowding of barracks did not permit of such careful isolation as obtained later, the mortality was higher. Later on, close observation and prompt isolation of carriers as discovered by bacteriological examination proved effective, and in Canada at least the mortality lessened very greatly in each succeeding year of the war. There is no doubt also the combination of a larger variety of strains contributed to increase the effectiveness of the serum used in treatment. In an outbreak in any

unit the cases were promptly removed to a special ward in hospital, the contacts at once isolated and examined for carriers, and vigorous disinfectant measures used. In this way further outbreaks were effectually prevented. If the same means had been carried out in civil life, the civilian epidemics would have been much reduced and incidentally the danger to the soldier in respect to this affection materially lessened.

Tetanus or Lock-jaw, which has its cause in the fouling of wounds with soil containing manure, was a disease much to be feared in countries so intensively cultivated and so heavily impregnated with stable fertilizer as France and Belgium. The precaution of the use of iodine and first-aid dressings to all wounds, however trivial, and the prompt use of tetanus antitoxin contributed in an enormous degree to the prevention of a high rate of mortality from this affection.

Diphtheria, Scarlet Fever, Measles and Mumps, are affections likely to spread among men quartered in cities and towns who inevitably mix freely with the civil population in their homes and places of amusement. The three latter are diseases often found among young men in their teens, who have not acquired the immunity conferred by previous attacks of these diseases. The Canadian soldiers, and particularly the men of the Flying Corps, who came from all parts of Canada and from all quarters of the United States, were particularly susceptible. It was only by the most rigorous methods of isolation and quarantine, particularly during the winter of 1917 and 1918, that the proportion of cases and the mortality from these affections was kept within reasonable bounds. Diphtheria is usually observed at an early stage in the army and here is seen the effective value both in treatment and cure of anti-diphtheriaic serum. The effect of this remedy too was strikingly observed in cases of infection of wounds in returned men with an organism of a diphtheroid or of a true diphtheritic type. The mortality from diphtheria in the army was comparatively small.

Smallpox, thanks to vaccination, was practically an unknown factor in the Canadian army in Canada; I personally know of but a single case.

The results of the precautions taken against lice, rats, fleas and other vermin, by means of which trench fever, typhus, relapsing fevers, and other affections are transmitted, are striking examples of the value of sanitary measures. To a Canadian medical officer, Mayor H. Orr, D.S.O., C.A.M.C., Officer Commanding of the Sanitary Section of a Canadian Division, is accredited the honour

of developing a simple means for the destruction of lice by baking the blankets and clothing of men at a temperature of 150° F. to 160° F., this heat being sufficient to destroy both the lice and their eggs. This and the utilization of a simple hut steam sterilizer for clothes and blankets designed by Lieutenant-Colonel Amyot, C.M.G., of the Provincial Board of Ontario, have contributed to an extraordinary degree in the comfort and sanitary welfare of our troops.

In the more easterly zones of the conflict, such as in Greece and Mesopotamia, diseases such as malaria, the plague, and dysentery in both forms prevail. Even here, and often under the most trying circumstances, the resources of the medical officer sufficed to prevent any but the mildest outbreaks of any of these affections.

Venereal Diseases.—Of venereal diseases in the army there was in the early days of the war a good deal of apprehension on the part of Canadian fathers and mothers. They were concerned as to the dangers to which their sons were exposed in England and France from venereal affections. Previous to the war, no effective measures for dealing with these affections were in operation in either Canada or Great Britain, and it was found necessary to employ in the army every practical procedure which experience has proved of value. These are:

(1) Education. By means of lectures, moving-pictures, etc., the soldier is instructed in personal hygiene, his patriotic feelings respecting the need of the nation are appealed to, he is taught that continence is compatible with health, the dangers to his family and to his future health and to others are pointed out, he is instructed as to the nature and means of infection of the various venereal disease affections and their results. In all a series of five lectures were given by the medical officer to all officers, non-commissioned officers and men.

(2) *Inspection.* There were weekly inspections of every unit, held without notice.

(3) *Recreation.* Recreation such as theatres, boxing matches, and various sports were provided under supervision.

(4) *Prophylaxis.* The men were instructed in preventive measures.

(5) *Early treatment.* Early treatment centres, open night and day, were provided at every Canadian orderly-room and in addition there were two in London and one in Paris. Further, similar centres for the use of Australian and New Zealand centres were open to Canadians. The men were warned that while both pro-

phylaxis and early treatment are of great value, they do not afford absolute immunity.

(6) *Penalties.* Half the pay of soldiers suffering from acute venereal disease is docked while the men are on the sick list, and during convalescence they are given fatigue duty and provided with suitable sports.

Results. The results, as shown by the report of the Canadian Sanitary Officer, show that in September, 1916, from nearly forty-two thousand Canadian troops in Great Britain there were nine hundred and sixty venereal disease cases; during the month of September, 1918, from one hundred and ten thousand Canadians in Great Britain there were seven hundred and fifty cases. Thus it will be seen in two years the venereal admissions had been reduced 66 per cent.

Within the last year the majority of the Canadian provinces have adopted measures dealing with the venereal problem, and in the course of demobilization through the foresight of the A.D.G.M.S. no soldier is discharged until he has had sufficient treatment to practically secure that he is non-infective. Cases requiring further treatment are notified to the executive officer of the Provincial Health authorities, and through him the local medical officers of health are given confidential information respecting each case. It then becomes their duty to direct the man to the nearest district centre or to a Soldiers' Civil Re-establishment for such further treatment as he may require. Since this plan has been adopted in February last, there have been approximately five hundred cases so instructed in the Province of Ontario.

Colonel Adami very aptly remarks:

"It is not the civil population that has to fear the soldier, but the soldier the civil population. Throughout the war the soldier has been well cared for, all means have been employed to diagnose venereal disease at its very onset, and to give hospital treatment immediately. It is then that disease is most easily controlled. Every soldier has been warned time and again of the dangers he runs, has been instructed as to personal hygiene, and has been afforded early treatment under supervision, As a result, there is no section of the community which at the present time is in a cleaner and healthier state; no section of the community which has less venereal disease. I speak here for the whole body of the Imperial forces. As for our Canadian experience, I may say that this autumn the instruction was given that all soldiers returning to Canada whose medical history sheets bore the record of venereal disease

should be given the Wassermann test. I have the August figures showing that 2 per cent. of the total number returning reacted, and all these were tertiary, non-infectious cases, for no active primary or secondary cases are permitted to return. The average number of reactions in the civil population is estimated at from 8 to 12 per cent. There is four to six times as much syphilis in the civil population as in the army. But in the meantime nothing of any moment has been accomplished for the civil population. Lord Sydenham in his letter to the *Times* of January 7th, speaks of the provision of early treatment centres. 'We are endeavoring,' he says, 'to secure the organization of clinics continuously available where early treatment by competent persons can be obtained.' But they are not available to-day. They will not at the present rate be available until demobilization—and demoralization—have become a matter of history. To meet the situation they should be scattered thickly all over the country. A man must not have to take a two-hour's journey after the act; he certainly will not take it. The dearth of expert syphilologists and of bacteriologists qualified to carry out the delicate Wassermann and other complement fixation tests demands that the centres for ordinary venereal diagnosis and treatment under the Act be few and far between, situated in the great centres of population. It is thus the civil population that to-day constitute the grave danger."

A serious handicap to the efforts of both army and civilians in the future care of venereal disease cases, particularly syphilis, is the expense of the arsphenamine compounds. In Canada the manufacture and distribution of these products are in the hands of two parties who have licenses therefor under the War Measures' Act. Neither of these parties has any vested right of invention or discovery but the monopoly held by them and the embargo secured by order-in-council against all foreign products keeps the price at a figure ($2.00 per dose), which is almost prohibitive to the ordinary individual and makes it difficult for boards of health or municipalities to provide as they should free and adequate treatment for all.

Nothing produced in any country should in this age be controlled by a monopoly which will enhance the price to the public. If this is true in respect to the ordinary articles of commerce, how much more important that the same principle should govern in respect to an article *necessary to the prevention and cure of one of our most serious communicable diseases.* The members of this Association will be gratified to learn that very soon the monopoly in

respect to the so-called salvarsan remedies will be a thing of the past, because after two years of persistent effort on the part of the Provincial Board of Health, it has been announced that a license for the manufacture of these products will be given to the Province of Ontario, whereupon we hope to produce the remedy at a cost within the reach of the poorest citizen of the country.

The Results. And what are the results of the sanitary precautions taken by the Canadian Medical Service?

In the present war, the Canadians had about half a million men enrolled. Of these, counting from 1914 to December, 1918, according to official figures supplied by the Department of Militia and Defence, fifty-one thousand, eight hundred and fifty-three died of wounds and but two thousand, eight hundred and fifteen from disease. In other words, the deaths from wounds were over eighteen times as great as those from disease.

These are astonishing figures, and if they were not official, could scarcely be believed, when it is remembered that the deaths from disease in the South African War of eighteen years ago amounted to 65 per cent. of the total death-rate. Note the comparison! 65 per cent. as against 5·14 per cent. This record is an achievement which forms the best answer to the criticisms made of the work of the C.A.M.C. The results indicate in a remarkable manner the value of the resources of modern scientific medicine when applied under a well-organized and efficient medical administration. They form an example for civil health administration and are a rebuke to the public which fails to accept well-known sanitary measures which prevent the outbreak of epidemics and their resulting mortality.

Effects of the War on Public Health. Since every physician in the army is *ipso facto* a health officer, it follows that much practical knowledge of sanitation has been acquired by those who have been medical officers during the war. The men themselves have seen the value of measures of prevention, such as inoculation, vaccination, the protection of water-supplies, venereal prevention, etc. It is not hoping too much to assume that the experiences of both officers and men cannot but be of great importance to the future of public health in Canada.

Personnel. Canada sent approximately three thousand medical men to the war. In the Canadian Forces there were approximately two thousand five hundred medical officers and an equal number of nursing sisters, and to the R.A.M.C. there were supplied

about four hundred and fifty medical officers and three hundred and fifty nursing sisters.

It is with feelings of pride that one reads the story of the medical profession of this country in relation to the war. This record is ably told in Adami's "War Story of the C.A.M.C.". It is proper that appreciation of the profession of Canada should be placed on record. No men of any class or profession in the Dominion have sacrificed so much as those physicians and surgeons who gave service overseas. Many of them by reason of age or physical condition might very well have claimed exemption and remained in the practice which had taken years and infinite self-denial to establish. Many of them were mere boys either out of college or with their college courses unfinished. Many, alas! will never return. With a noble, unconscious serenity they left their homes, and all that was dear to them, and in the glad spirit of youth went forth to aid in saving for their country the priceless gifts of happiness and security which they alone cannot enjoy. Among them were some of the finest types of professional life in this or any country. If we have been saved by their sacrifice, the poorest return, but the only one, we can make, is to keep their memories enshrined forever in our hearts, and to remember rather the valour and glory of their deeds than the tragedy of our loss. It is for us to keep the faith for which they yielded their lives.

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THE PHYSICAL CENSUS

By J. G. Adami, C.B.E., M.D., F.R.S., *Colonel C.A.M.C.*

[The Armistice and the changes impending at the Ministry of National Service rendered it inadvisable to publish this in full at the time of delivery. Various causes have combined to hold up a further development of the physical census herein discussed, but it has been thought well to publish this now as indicating what advantage would be gained by the Dominion in developing such a physical census of its manhood.]

ALMOST without our realizing it, this war has brought about the most far-reaching social innovation that Great Britain has experienced, an innovation that has been introduced so naturally that I doubt if one man in one hundred thousand has realized its vast significance. It is an outcome fraught with huge potentialities, one that has touched our profession and touched it very nearly, seeing that we have been the essential instruments.

When Great Britain and its Dominions possessed a voluntary army it was right and proper that those who volunteered should submit themselves to a physical examination before being accepted. It would have been futile to accept a Falstaff's regiment of the halt and maimed, the decrepit and mentally affected. Everyone recognized that our recruits must reach a certain standard of fitness before being accepted; must measure up to a certain height, weight, and chest capacity, and be endowed with a reasonable number of limbs and digits, with eyesight sufficient to see the object aimed at, and with freedom from such ills and deformities as are incompatible with "carrying on" in the field.

In other words, from time immemorial certain standards of age, height, and physical conditions have in the various countries determined the acceptance or rejection of men for the army. The medical history sheet and attestation form of the recruit of August, 1914, were no new things. With progressive modification—the last of which was the entry regarding inoculation against enteric—they had long been in use in the British Army.

With the onset of the war, therefore, we were fully prepared for the preliminary physical examination of the would-be soldier,

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An Address delivered before the Medical Society of London on November 25th, 1918.

and when from voluntary we passed to what may be termed, if not "impressed", certainly "impressive" service, and from this to conscription of all men of serviceable age, it was scarce noticed that at a bound we had established, under the Ministry of National Service, a physical census of the active manhood of the British Isles, and in November, 1917, for the first time had placed ourselves in a position to gain a comprehensive grasp of the quality of that manhood, of its efficiency and its deficiencies. This, and all that it connotes, is the outcome to which I have referred.

The information sought in the physical examination of the recruit or, more accurately, during these latter years of the war, the conscript, and recorded upon A.F.B. 178, the medical history sheet, is of necessity confined to a very small number of headings —name, place and date of birth, occupation, height, weight, girth of chest, colour of hair and eyes, complexion, physical development, data regarding vaccination, vision, identification marks, and defects or ailments.

Of necessity, because of the urgency of our need. The nation was unprepared for conscription. There were no previous records of the individual to form a basis. The medical boards throughout the country had to examine the conscripts in their tens of thousands, and in their millions. The physicians comprising the medical boards were themselves untrained to the work. Scores, and in some cases, hundreds of men had to be passed under review day after day at the various centres. A minimum of essential information had to be elicited. At first the one problem to be solved was, is the man, or is he not, fit for active service. At a comparative early period in the war, with the imperative need to employ every available man, it was recognized as absurd to employ the thoroughly fit elsewhere than at the front on full active service.

Such men were wasted if employed at camp and garrison work in England, and along the lines of communication. Much necessary work at the base and along the lines of communication could be performed by men incapable of standing the strain of front line service. And so the second year of the war had seen men classified into categories A, B, C and D, "A" including those fit for active service at the front, "D" the unfit and the rejected, "B" and "C" representing different grades of partial fitness.

The interesting fact is that the relatively few headings of the medical history sheet, when properly translated, proved themselves fairly adequate for army purposes and, what is more, have given us a sufficiency of data from which to construct a first census of

the physical capacity of the adult manhood of Great Britain and her Dominions of service age.

It is that census and its significance that I want to discuss, and the time is fitting. During the last four years, while the war was in active progress, you can well understand that any full study of the results of this physical examination might have given information regarding our man power to the enemy, information of the very first importance. To-day, if peace has not been as yet declared, the very terms of the armistice and the acceptance of the same, make it impossible for the enemy to take up arms again for years to come.

Let me confess that I am no statistician, and for your comfort assure you that I am not going to inflict upon you long series of figures. Some I will have to mention, but they will be as few as can be employed to establish or illustrate my main contentions. Those few will, I think, be such as you can accept. So far as regards Great Britain I owe them to the Minister of National Service, or more accurately the present President of the Local Government Board, and to the admirable staff in Victoria Street under Sir James Galloway and Colonel Rhind respectively. It is not the figures themselves, but their lesson that I want to dwell upon.

Saying this, I fully admit that the figures have to be used with great care. For example, the standards of eyesight have been lowered during the course of the war, so that a certain proportion of men have in 1918 been accepted as fit for active service who would have been rejected in 1914. The same is true regarding height. Of late years we have accepted pigmies for active service and formed them into battalions. Then again, the figures given are those of the men who pass their first physical examination before the National Service Boards. If the experience in Great Britain has at all corresponded with that of the Canadian Expeditionary Force, there must in addition be heavy culls by the army medical boards before men passed on as "A" are permitted to embark for service at the front. If these were taken into account it would only emphasize yet further the lesson to be learned.

On the other hand, the only careful analysis of categorization has been made upon the 1918 men examined by the National Service Boards, which have been in action since November, 1917, and it may be objected that the bulk of the virile young manhood of Great Britain had already entered the army, so that these late statistics give of necessity an unduly low proportion of high grade men. Now there is some force in this contention, but on the other

hand it must be borne in mind that the largest class of men examined in the first six months of this year was that of the new crop of those attaining eighteen years, while of the remainder the bulk was composed of exempted men of various ages, miners, munition workers and other men certainly above, and not below the general average of fitness. The work of the years to come will decide how nearly the present figures afford an accurate index of the physical fitness of the nation. I learn from the Ministry of National Service that the returns for the first half of 1918 are regarded as constituting fair samples of the state of affairs in the various districts.

This matter of categorization has been so much before us that it is unnecessary for me to define what constitute the different grades. At most it is well to recall that in Grade A are included all men who promise from their physical condition to develop under training into soldiers fit for active service at the front. In it there are included what may be termed strictly average men and those a shade below the average, together with all who are above the average. In Grade D are included those at the other end of the scale, found upon medical examination to possess disabilities which debar them from any form of service. Below D come men of the M class—men so obviously unfit as to be rejected on mere inspection, without further medical examination, men who have lost a limb, or exhibit grave deformities or hopeless lack of intellect.

Yet one further prefatory consideration in order that you may grasp the bearing of the few figures which I am about to inflict upon you. I can best put the matter before you by following closely the argument employed by Professor Arthur Keith in a letter to Sir James Galloway, brought before the Scientific Committee of the Advisory Medical Board of the Ministry of National Service, and also in a lecture delivered by him at the Royal Institute of Public Health on October 9th, 1918. If we take a thousand or ten thousand individuals unselected and sort them into classes according to their position in the scale as regards any one property which is capable of accurate measurement, and plot out the results, we obtain what is known as a polygon of frequency. Take, for example, height. A thousand Cambridge students measured for stature gave the following results : those measuring five feet nine inches formed the largest group. Those measuring more than this and less than this formed classes which inch by inch tailed off on either side in a curiously symmetrical manner. There were roughly as many men one inch above this mean as one inch below, and the classes steadily diminish in size as we pass away from the

mean of five feet nine inches, until the curve joins the base line at five feet one inch and six feet five inches respectively, which, taking one thousand men means that, in the University population, well under one in one thousand men are under five feet one inch in height, or over six feet five inches.

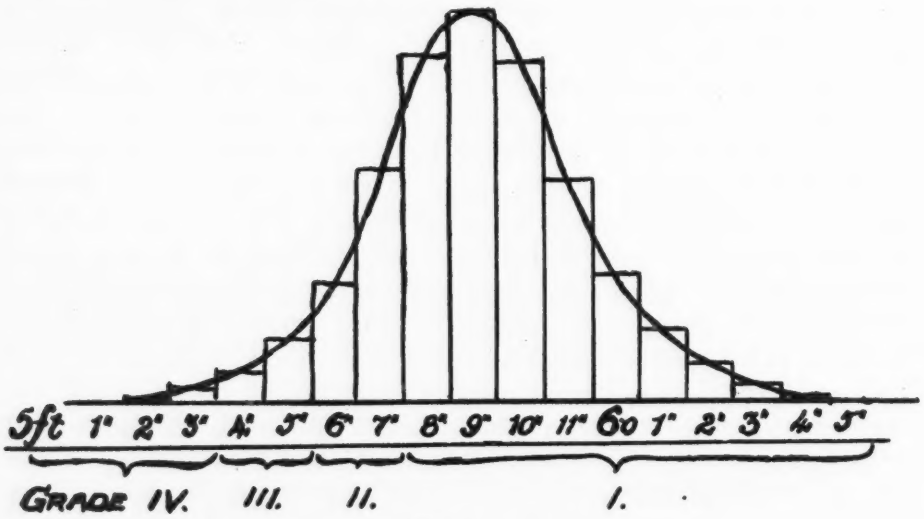

FIG. 1.

On this polygon of frequency we can construct, as shown in the diagram, what is known as a curve of frequency, and this you will observe is symmetrical about the mean. Now if this be true for height, we may apply the same principle with fair security to other measurable properties of the men composing the British army, and so, combining the results, construct a polygon or curve of frequency illustrating the efficiency of our conscripts. In the polygon of frequency for height, Professor Keith points out that the mean class (of those of five feet nine inches), together with the classes above the mean, constitute 56 per cent. of the total. If we include those just below the average, namely the men of the five feet eight class, these together constitute 70 per cent. of the whole. It is the average man, those above the average and those just below the average, who become graded as Class I, *i.e.*, as men fit for active service at the front. On these figures he has estimated that in a normal population each one thousand men of serviceable age should afford seven companies of "A" men, of Grade I, two companies of Grade II, three platoons of Grade III, and one platoon of Grade IV.

700 out of each 1000 should belong to Grade I.
200 " " " " " II.
75 " " " " " III.
25 " " " " " IV.

In favour of this estimate on his part is the fact that the nearer we approach to a healthy and what may be termed a normal population, the nearer do we approximate to these figures. If, that is to say, we take the findings of medical boards upon young adults brought up under healthy surroundings, in country rather than in city districts, or still more clearly in those following active muscular occupations, as for example, young colliers, we observe that they yield results which come close to "Keith's index". We must be prepared to find that the older the man, the more he has been exposed to strains of various orders, infections, accidents, overwork and nutritional disturbances, the less his general physical efficiency. With most of us the descent from football to tennis after the age of twenty-five, and from tennis to golf after thirty-five, or yet earlier, is an expression of this fact. Already at the age of twenty-five there is a reduction in the number of Grade I men per thousand, and from this to the age of forty-five the descent is rapid. As to this descent, even before the age of twenty-five years, I need but recall to you the experience of the Air Service and the results, not merely of their physical examinations for pilots and observers, but equally of practical experience I have, it is true, a friend who managed to pass his board for admission as a pilot after the age of fifty, but he is a "*rara avis, aviator rarior*".* In general, from eighteen to twenty-four includes the period during which men are found fit to fly, and at twenty-five more candidates, I understand, are rejected than accepted. I call special attention to this, because in the figures I am about to put before you this matter of age and its effects has not been taken into full consideration.

I am inclined to believe that this failure to take age incidence into account has led to a certain amount of exaggeration as to the health conditions, or want of health conditions of the manhood of Great Britain.

When, for example, we obtain the following results of the medical board findings in one district, with variations in the Grade

*Sir St. Clair Thomson has called my attention to the better known case of Gabriele d'Annunzio.

I men from three hundred and fifty-four in February to double that number in April, it is obvious that we have to deal with more

RATE PER THOUSAND

Keith's normal	Grade I	II	III	IV	Number examined
	700	200	75	25	1000
A mining district					
January, 1918, per thousand	382	129	355	133	1115
February, 1918, per thousand	354	84	450	110	723
March, 1918, per thousand	427	184	332	55	2673
April, 1918, per thousand	703	136	128	32	7030
May, 1918, per thousand	523	187	241	39	11,526

than can be attributed to seasonal influences, that the men appearing before the Boards in February were of a different class from the April group, and the explanation must be, and on enquiry I find that it is, that in February there appeared more elderly munition workers, in April there were called up almost exclusively youths of the 1918 vintage, those who had recently attained the age of eighteen. As shown by one of the National Service Commissioners*, from a study of the Boards in one our our great northern cities year by

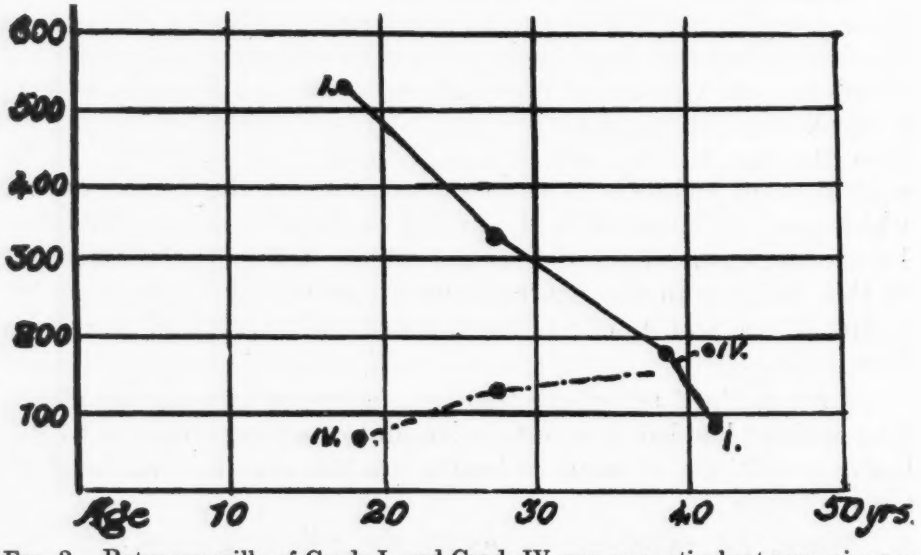

FIG. 2. Rates per mille of Grade I. and Grade IV. men respectively at successive age periods.

*I am in the unfortunate position of being unable to quote my authorities as the time is not yet ripe for making public the condition of individual districts.

year the number of Grade I men decreases with striking rapidity. In this city, men aged eighteen years, eight months, yielded five hundred and thirty-one of Grade I, while those of the age period thirty-six to forty yielded less than a third of this number, namely one hundred and fifty-four, and of men of forty-one years of age only seventy-two per thousand passed into Grade I.

Doubtless it is figures like those for February that led the Prime Minister lately to declare that the results of the physical examination of the manhood of Great Britain demonstrated that the physical state of the British people is lower than that of any other civilized country. It looks appalling when a thousand adults, instead of affording seven hundred men—seven companies—fit for active service at the front, yield only as here, three and a half companies, or as in a great textile centre, less than one and a half. I cannot find out upon what official information Mr. Lloyd George made this statement. My experience of the heads of the Ministry of National Service is that they are extraordinarily cautious as to the information they impart.

I do not say that the Prime Minister was mistaken. It is quite possible that his statement is correct—that with his clear vision he has once again seen farther into the heart of affairs than the rest of us. No civilized country has so dense a population, and none so large a section of population which for an equal number of generations has led a factory existence with all its known attendant effects upon the physical well-being of the individual and his offspring. All I would say is that the figures collected have not yet been fully analyzed, and that until that has been done, judgement may well be suspended. Before any positive statement can be made there is needed an analysis of the grading in various districts *according to age*.

This, I have not the least doubt, will show certain districts yielding results gravely below the average. As a matter of fact we already possess data demonstrating this. Certain National Service Commissioners have already made the necessary analyses for their districts. Thus a small West Midland group of those of eighteen years yields six hundred and sixty per mille in Grade I. From a northern city one commissioner reports as already noted, five hundred and thirty-one; in a busy manufacturing town of the Midlands the number was five hundred and seventy-three; whereas in certain Midland country districts it rose to eight hundred and five to eight hundred and nineteen per thousand. With such figures as these last it cannot be said that Dr. Keith has placed his "Bogey" too high.

Judged from these figures we may safely take the April figures as representing in the main the eighteen year old class. Of these I am indebted to Sir James Galloway for the monthly statistics for the first half of this year of all the districts in a representative section of England—representative, in that it embraces areas which are some of them predominantly agricultural, others mining, others industrial, among the latter one of the greatest textile centres, and one of our most noted centres for munition factories and workers in metal; along with these there is an important seaport. Taking the Grade I men alone for April we have the following figures:

	No. examined	No. Grade I per mille
A mining area	7030	703
A munition (metal work) area	8919	660
An industrial area (cotton, jute, etc.)	5295	623
An agricultural area	2871	613
A seaport and shipping area	1238	491*
A textile area (woollens)	5001	405
A textile area (woollens)	2933	384

Here, granting that we deal with men of the same age period, we have indications to an even greater extent of the loss of effective man power in certain classes of the community, and these indications are supported by the fact that it is not in one month's returns only, but month after month the proportion of Grade I men is materially lower in certain districts than they are in others. The indications are those of a condition so serious that for this reason alone it is essential that the Ministry of National Service continue its work after the war, if only to probe thoroughly into this matter of the relative health and efficiency of our manhood in different districts, engaged in different occupations. The country cannot stand that there should be large masses of our population, in which more than half of the youth fail to attain even to a standard well below the average of physical condition. Once we have learned that an index of physical fitness is possible, once we have established such, it is a national need that the work be continued, so that, detecting our weaknesses, we set to work to counteract them. No modern country can exist without its statistics of births, infectious morbidity and deaths. These are regarded as essential for an understanding of the sanitary state and status of a country. But surely a far more

*These low figures may be due to the fact that a very high proportion of the young men had volunteered for sea service before the age of eighteen.

accurate and delicate index is afforded by a census of the condition of the adult manhood of the country, not at the two extremes of birth and death, but in its productive period; for the physical state of the young adults is an accurate index of the health and well-being of the nation.

As a basal investigation it is evident that what is now needed is an analysis of the medical history sheets for 1918, if not of the whole country, at least of areas devoted to special pursuits—or better still of those engaged in special occupations, in order to observe the primary condition of those engaged, and the progressive effect of those occupations upon the physical state of the workers. We need an analysis of the physical state of, say one thousand workers in each important occupation belonging to the quinquennia eighteen to twenty-three, twenty-three to twenty-eight, twenty-eight to thirty-three, and so on. With this we will possess a sound foundation, and provided with this we will for the first time be able to make positive statements regarding the state of our adult population.

It is likely, for instance, that the strong healthy youths in a given area elect some vigorous occupation for their life work, such as mining, metal work and engineering; whereas the less fit engage themselves in textile industries, clerical work, shop-walking and the like. Thus at the age of eighteen we must expect to find higher results in the more strenuous occupations.

The essential point is to determine the effects of these occupations, the extent of the lowering of the grades after five, ten and fifteen years.

The work of this last year by the Ministry of National Service affords the country a unique opportunity to know itself, and know where it stands, an opportunity which must not be missed.

Personally I owe it to the Ministry to state that my enquiries there have been met with the greatest courtesy, and most cordial willingness to impart information. While the war was continuing, I could not conscientiously ask to be provided with data of the order here indicated, the compilation of which would have placed too heavy a strain upon a staff already hard worked. Since the signing of the armistice the time has been too short to obtain the necessary figures. But the material is all there, together with those trained in abstraction of data for statistical purposes.

So much for the aspect of the physical examination of our adult manhood and its significance. Let me now turn to the other

extreme and take up the information we possess regarding Grade IV—the rejected.

It is evident that if in any district there are obtained not seven hundred, but, say, four hundred of Grade I men, the remaining three hundred must be distributed among the other grades, and that thus a lowering of the physical capacity of the district is accompanied by an increase in the number of the rejected. Most, it is true, of those who fall out of Grade I find themselves in Grades II and III, particularly in the earlier years. It is after forty that Grade IV increases by leaps and bounds. Taking all ages together, in certain large manufacturing towns in the north the rejections in January and February of this year rose to as high as 26·8 and even 30·4 per cent. of the total examined. In the two instances here cited the Grade I men had fallen to four hundred and twenty-seven and three hundred and fifty-eight per thousand respectively. The full significance of these figures can only be determined, as already emphasized, when an analysis has been made according to age.

If twenty-five per thousand be taken as the normal figure for Grade IV, at eighteen years of age, we find among young adults that when Grade I falls to just below five hundred, Grade IV may rise to between fifty and sixty. There are, however, considerable variations in this respect in the different districts, possibly associated with the prevalent occupations in the same.

We owe to one of the Deputy Commissioners an analysis of the causes of rejection of men between the ages of eighteen and fifty-one. Between January 1st and June 30th, 1918, twenty-four thousand, two hundred and eighty-one men in a large Yorkshire town were examined. Of these one thousand seven hundred and seventy (or 72·8 per mille) were placed in Grade IV. There were in addition seventy-four in class M men, so "obviously unfit" that medical examination was dispensed with. It is to be noted that in this area several thousands of miners were called up for examination up to the age of thirty-five years, and the Deputy Commissioner calls attention to the fact that the majority of the rejections occurred between the ages of twenty and thirty.

I have taken the liberty of arranging his data, not as in the original report, according to relative frequency, but in classes according to the cause of rejection.

ANALYSIS OF MAIN HEADINGS OF CAUSES OF REJECTION IN 1844 CASES IN AN INDUSTRIAL (MINING) CENTRE

I. Infections and Their Results

	No. of cases	Percentage of rejections	Percentage of total examined
Tuberculosis	584	31·6	2·3
(Pulmonary tuberculosis, 468 cases or 25·3 per cent.)			
Valvular disease of heart	188	9·0	0·7
Infantile paralysis	69	3·7	0·29
Otorrhœa	41	2·2	0·17
Chronic bronchitis	39	2·1	0·15
Rheumatoid arthritis	26	1·4	0·1
Disordered action of heart	10	0·5	—
Totals	957	50·5	—

II. Injuries and Occupational Conditions

Amputations	104	5·6	0·42
Varicose veins	98	5·3	0·4
Injuries (head, back, and extremities)	81	4·9	0·33
Opacity of cornea	12	0·6	0·04
Miner's nystagmus	11	0·6	0·04
Flat foot	11	0·6	0·04
Hallux valgus	11	0·6	0·04
Ventral hernia (post-operative)	7	0·4	0·02
Totals	335	18·0	—

III. Nutritional and Chronic Disorders and Intoxications

Chronic nephritis	48	2·6	0·19
Knock-knee	11	0·6	0·04
Cataract (excl. congenital)	10	0·5	0·03
Amblyopia and amaurosis	6	0·3	0·02
Exophthalmic goitre	1	—	—
Totals	76	4·0	—

IV. Conditions in The Main of Antenatal and Natal Origin

Epilepsy, major and minor	70	3·7	0·29
Idiocy and arrested mentality	53	2·8	0·2
Talipes	18	0·9	0·17
Myopia	18	0·9	0·07
Dumbness	10	0·5	0·03
Diabetes	6	0·3	0·02
Neurasthenia	5	0·2	—
Other inherited and congenital conditions	11	0·6	—
Totals	191	10·0	—

V. Conditions in Part of Antenatal Origin, in Part Nutritional, Occupational, or Infective

Curvative deformity of spine	34	1·9	0·14
Poor physique	30	1·5	0·13
Inguinal hernia	11	0·6	—
Totals	75	4·0	—

VI. Other Causes Not Clearly Coming Under The Above Headings

	210	11·3

The outstanding feature in this analysis is that eminently preventable causes constitute much the greater portion of the headings. Infectious disorders and their results constitute more than half; tuberculosis of all orders roughly one-third, pulmonary tuberculosis just over one-quarter. The most impressive feature about these tuberculosis figures is that the majority of these cases diagnosed by the medical boards had been previously unsuspected and unreported. According to Sir James Galloway, in a Midland area, four hundred and seventy-six men were referred to the tuberculosis authority of the area as suspect. Of these, two hundred and seventy-seven were found affected. Of the two hundred and seventy-seven, no less than two hundred and eighteen were previously unrecorded. They were cases of active, but hitherto unrecognized tuberculosis. Here in an industrial centre injuries and amputations constitute one-tenth of the causes (if I have read the figures aright). I confess to a little surprise, both in this particular series and in other series that I have studied, in finding that inherited and congenital defects and those dating from parturition constitute only some 12 per cent. I had not, that is to say, expected so large a number of infectious cases to show themselves, and indeed did we deal with only young adults from eighteen to twenty-five, with the diminution of the infectious group this antenatal and natal group would stand out more prominently. There is also another modifying factor (and this explains also the relatively small number given under the heading "poor physique", namely that those born into the world with more or less serious defects, and with enfeebled constitutions, are more susceptible to infectious and nutritional disorders, and when these appear for examination it is the active process rather than the underlying and predisposing factor that is given as the cause of rejection. With the pouring in of immigrants from south Europe, and notably from Austria, Poles,

Galicians, Ruthenians and the like, we in Canada just before the war were rapidly developing slums—and bad ones at that—in our larger cities. Nevertheless, in general, the conditions of life in the North American continent are healthier and more "open air" than here in Great Britain, and the impression given to the Canadian or American visiting the industrial centres of northern England after long absence, is a painful one. The stunted appearance of the workpeople in spite of apparently abundant food, and of cottages no longer back to back, but in fair sanitary condition, lead to the conclusion that we have to deal, not with a condition of individual acquirement, but with a germinal defect; fathers and mothers engaged day in, day out, at indoor occupations, undergo a slow sapping of their strength, and a low form of intoxication which tells on the germ cells as on the body in general, so that the offspring comes into the world in an enfeebled condition, and with incomplete endowment of cellular vitality. We have here, in short, the onset of racial deterioration. I had, I confess, looked to obtain fuller evidence of this deterioration in the form of a greater number of individual conditions of defect. Judged from these figures such deterioration shows itself most often in the form of increased susceptibility and liability to infectious disease, more particularly tuberculosis and rheumatoid affections.

I had hoped, for comparison, to obtain similar studies from the United States, knowing that there so far they have selected for their army only their manhood between twenty-one and thirty years of age—a younger and more homogeneous group from which to draw basal conclusions. But such is the teeming population of that nation that thus far they have only needed to call up their "A" men. Their "rejects" therefore correspond, not to our Grade IV, but to Grades II, III and IV. As confirming Professor Keith's calculation as to what should constitute Grade I, it is interesting to note that up to December, 1917, out of rather over two and a half millions examined, 29·1 per cent. had been rejected, giving a Grade I class of seven hundred and nine per thousand, reduced by later rejection in camp to six hundred and sixty.

I have taken the figures given by my friend Dr. E. L. Fisk* of New York. He deals with the results of seven medical boards in Detroit, Brooklyn, and New York, with seven thousand, six hundred and eleven men examined out of eight thousand, eight hundred and seventy-three called. As showing the difficulties in arriving at precise results it may be noted that there is here the question

*Journ. Amer. Med. Assoc., 70; 1918, 300.

raised as to what was the condition of the twelve hundred odd who were not given an examination. I have classified his figures after the plan adopted in the last series and obtain the following results:

I.	Conditions in the main infectious and their results	36	per cent.
II.	Injuries and occupational conditions	18·3	"
III.	Nutritional and chronic disorders and intoxication	17·6	"
IV.	Conditions in the main of ante-natal and natal origin	23·5	"
V.	Conditions in part of ante-natal origin, in part nutritional, etc.	14·7	"
		110·1	"

It is evident that in the American Board papers more than one cause may be given for rejection, just as their hospital admissions may give more than one heading for diagnosis. As might be expected from a group of men of earlier age period, the proportion of rejections for infectious disease is much lower. It would be yet lower if it did not include as its largest constituent (no less than 16·3 per cent.) bad teeth, the result of mouth infection. Had mouth conditions been fully taken into account, the British rejections would have been materially increased. The most striking difference is that whereas in the north of England towns 25 per cent. and more of the rejections were on account of pulmonary tuberculosis, here only 3·4 per cent. of the total are not accepted on this account. It is not possible to compare the two tables in the matter of rheumatoid conditions, since in the American analysis all heart conditions are grouped together, constituting 8·12 per cent. of the total. As might be expected, also the injuries and occupational disorders do not loom so large in the more mixed Statesian groups. "Feet" (including flat feet, hallux valgus and hammer toe) form, as might be expected, a more important group of rejections, for Americans in general are not so active on their legs as are the English, and while they pride themselves upon being better booted, that too often means that their feet are "cribbed, coffined and confined" to the disadvantage of those members. With regard to nutritional disorders, "under weight" and "over weight" (15·7 per cent. and 1·4 per cent. respectively) are the most important headings, conditions largely neglected in our British

examinations; while similarly in the group of conditions which I classify as mainly of ante-natal and natal origin, myopia and eye conditions head the list (20·7 per cent. of the total). Possibly I may be criticised for regarding myopia as in the main an inherited condition; it may be argued that it should be included in the next group. I can only give it as my personal experience that myopia, like astigmatism, with which it is often confounded, is largely a family failing, and shows itself irrespective of stress, although admittedly stress aggravates the condition.

But making every allowance, admitting, for example, that these American figures include Grades II and III among the rejects, it has to be confessed that the more we study these and similar figures bearing upon the physical examination under the Ministry of National Service, whether we enquire into the rejects or the relative proportion of "A" men, the more do our hearts become disquieted within us. All is not well with industrial England. And equally must the conviction grow upon us that this work inaugurated by Sir Auckland Geddes must continue and be pressed forward. The service it is capable of rendering to the nation is too great for the work to cease with the cessation of the war. Rather must the accomplishments of this year be regarded as a preliminary canter, or like the practice balls at cricket. This year's work has from one end of the country to the other trained a most valuable band of medical men in the methods of rapid and accurate estimation of the physical state of the individual; it has revealed the strength and the weaknesses of the medical history sheet; it has indicated the lines along which the most valuable results are to be obtained. Indeed you will already have seen that to-night any service that I may perform is not in providing definite conclusions, so much as in indicating by this study the lines of future advance. While we owe to the system that, last spring, thanks to this accurate knowledge of the available man power of the country, the situation was saved, and men could be passed into the army reserves as fast as they were needed to make up for the drafts urgently demanded at the front, it has to be admitted that the work has been carried on inevitably at too great a strain, with too little opportunity to enquire deliberately into the significance of the results.

Under present arrangements, with the onset of March, all the new batch of those who have attained eighteen years will present themselves for their physical examination. Then for the first time we will have the energies of the medical board fully engaged upon the study of one definite age group, and for the first time, without

difficulty, data can be established regarding the efficiency of the young manhood of the country. It is all important that nothing interfere with this. I have heard it argued that with the cessation of the war everything that savours of conscription will go by the board, and it is further suggested that, with this, physical examination will be given up.* I would only say in reply that if industrial Britain and labour have an eye to their own highest interests, they must recognize that in the physical census they have become possessed of what is far and away the most effective instrument for determining, in the first place, these conditions and those occupations which are no longer to be tolerated, and for effecting the necessary changes. Once it becomes demonstrated, not from isolated cases, but from the data bearing upon all engaged in it, that a particular occupation leads under present conditions to the rapid deterioration of those employed, or that a given district, owing to conditions of life therein, is well below the proper average of well-being and health, the government must take action, and must initiate such reforms as will lead to a reasonable and healthy existence and to the uplift of our people. What shall it profit a man if he gain the whole world and lose his own health and peace of mind; what shall it profit a nation if it gain the wealth and the dominion of the whole world at the cost of the degeneration and degradation of its people? For the people is the nation.

And to-day more than at any previous time in the history of these Isles, or of the British peoples, of the Dominions equally with the home country, after the loss of so many of the best and most virile of our manhood, it is all essential that those of the coming generation should be brought to a state of full physical efficiency. The best is needed of every man. The old "laissez faire" policy which is responsible for the defective state of our teeming industrial districts, must go by the board, it must become a memory of the unhappy past.

After all, the country is prepared. School children are now examined periodically and their measurements and condition of health are recorded. It is a natural step forward to repeat this examination at the entrance to manhood. Indeed, if the earlier information could be more available, a more or less continuous record of the medical history of the individual would be provided—the beginning of a health "dossier" of every man.

But, of necessity, if under the new conditions we are to examine

*This unfortunately is what happened.

the new batch of young adults, I will not say that the examination is to be more thorough—for I know that the members of the National Service Medical Boards as a body have done their work conscientiously and according to codified instructions (which the Army Medical Boards did not possess)—but that the records must be more complete. I am glad to know that this matter is being actively taken up by the Ministry of National Service. The data which were sufficient for the army, sufficient to determine whether a man was fit for active service at the front or on garrison duty, are scarce sufficient to form an adequate record. Time forbids that I should enter into any detail. I may, however, point out that space should be afforded to record, not merely generally, but specifically the man's occupation, and to note the nature of any previous occupation; that hitherto it has been considered sufficient for army purposes merely to satisfy oneself that a man has the necessary amount of intelligence, I will not say to understand, but to obey orders. To estimate a man's capacity as a citizen something more is necessary, some indication of the grade of his mental qualities. For citizenship, intelligence is as important as physical capacity. Indeed the medical history sheet takes no account of, and specifically has no space for separate record of the state of the different systems. There should be headings for notes regarding the state of the nervous, circulatory, respiratory, digestive, and other systems, more particularly regarding the first three of those. Encouragement should be given, by providing adequate space, to note previous diseases and not merely one, but, if they be of diverse orders, all the leading departures from the normal which may be factors in lowering the man's category. The time has passed for labelling a mar to stand or fall under a single heading. In this way lies the road to imperfect statistics, and imperfect knowledge. It is difficult to say how much harm has been done to the individual in this way by the old army regulation that only a single diagnosis shall appear in the admission and discharge book entry of the individual soldier, which still remains the official record of casualties. As a result, not only are conditions overlooked when the patient is transferred from one hospital to another, but the medical statistics of the war cannot be other than approximate. If, for example, a man be at the same time wounded and gassed, his casualty is entered as the one or the other; if in such case he is entered as wounded, then the record of gassed cases is made inaccurate, and vice versa. And lastly, for pensions purposes, it may easily happen that the soldier claims in perfect honesty on

account of a chronic disturbance set up by a condition which is not that entered in the admission and discharge book, and the official papers, to his detriment, contain nothing which substantiates his just claim.* Not one, but every grave departure from the normal should appear upon the medical history sheet if accurate statistics are to be obtained.

The Empire has in this war lost some three quarters of a million of the fine flower of its manhood, and of the remainder of the three million odd casualties a very large proportion must be seriously and more or less permanently lowered in vitality and in capacity. It is a grave situation. Not merely have we now, in the words of His Majesty, to create a better England and a better Empire, but we have in the first place to counteract this heavy loss, and see that it does not tell against our race for long years to come. Possibly too much stress is laid upon this aspect of the case. It has been said, and before the war I was inclined to believe it, that the small stature and lack of virility of the French were the direct outcome of the widespread destruction of the best of France's man power during the wars of the Revolution and the Napoleonic régime. It was my privilege to be in France in July before the opening of the war, and at Versailles to see some of her best troops engaged in field exercises, and again this last May to travel behind the French lines from the Swiss border up through Nancy and along the valley of the Marne. The change I found remarkable; it was difficult to believe that one dealt with the same race. Now the soldiers are splendid examples of manhood. Rarely have I seen a finer body of men. Clear-eyed, good complexioned, with lithe, easy bearing, as a class they looked an inch or two taller than the French soldier of the days before the war. And what is true of the effects of three and four years of life at the front in the open upon the French, is equally true of its effects upon our own men. This war is very far from being a matter of all loss and no gain. The majority who have survived are definitely finer men from their experience. Again it must be remembered that the mothers who bore the splendid men we have lost have many of them given birth to younger sons of the same quality, too young to enter the army. Those we still have, and their sisters are of the same high breed.

But, undoubtedly, the loss of so large a proportion of Grade I

*This danger to-day is offset by well filled-in Medical Board papers (A.F.B. 179) but in the earlier years of the war this was not the case, and if then his Army Form B 179 was incomplete he now has no redress.

men out of the community gives the Grade IV men a greater opportunity to mate and reproduce their defective strains. I refer here, not to those who are placed in this grade for military reasons, on account of injuries, amputations and the like—conditions which are accidental and have no deleterious influence upon the germ cells—but to those of poor physique, the degenerates, neurasthenics, and deformed, whether in body or mind, and the sufferers from chronic infections. How is this to be guarded against? How are we for the good of the race to encourage our womenkind to reject the "rejected"? There is, of course, no telling what the women of the Empire will do now that they have the vote and admission to the councils of the Empire. This matter of racial improvement is, one would think, a foremost matter for them to make their own. Barring this, I am convinced that in the present temper of our people it is eminently unwise to attempt anything of the nature of restriction of what are regarded as the rights of the individual. Even before the war the restrictive measures introduced into the statutes of sundry States, notably in North America, were seen to be foredoomed to failure: enactments, for example, demanding a certificate of health and freedom from venereal disease before marriage, demanding the segregation of the weak-minded or their castration if degenerates. If these could not be carried out before the war, still less could we hope to put them in force to-day, when there is this widespread ferment for individual freedom, following upon the downfall of the autocracies.

There is a better way, it seems to me, that not of forcible repression of the bad, but of persuasive encouragement of the good.

Let me recall the diagram I employed at the beginning of this address to illustrate the principles of grading, that of the polygon of frequency. You will remember I pointed out that in Grade I we include several classes, namely the mean, those just below the mean, and all classes above the mean. Now this is all very well for the army. All that the military authorities require from the medical boards is the assurance that the men delivered to them are fit for active service; they will undertake the subsequent classification. There is absolutely no reason why in civil life this should satisfy us or that we should rest content with jumbling together the indifferent, the average and the potentially first-class citizen. In that way lies stagnation. There is absolutely no reason to-day that the grades of the Ministry of National Service should be slavishly identical with the categories of the army. There are

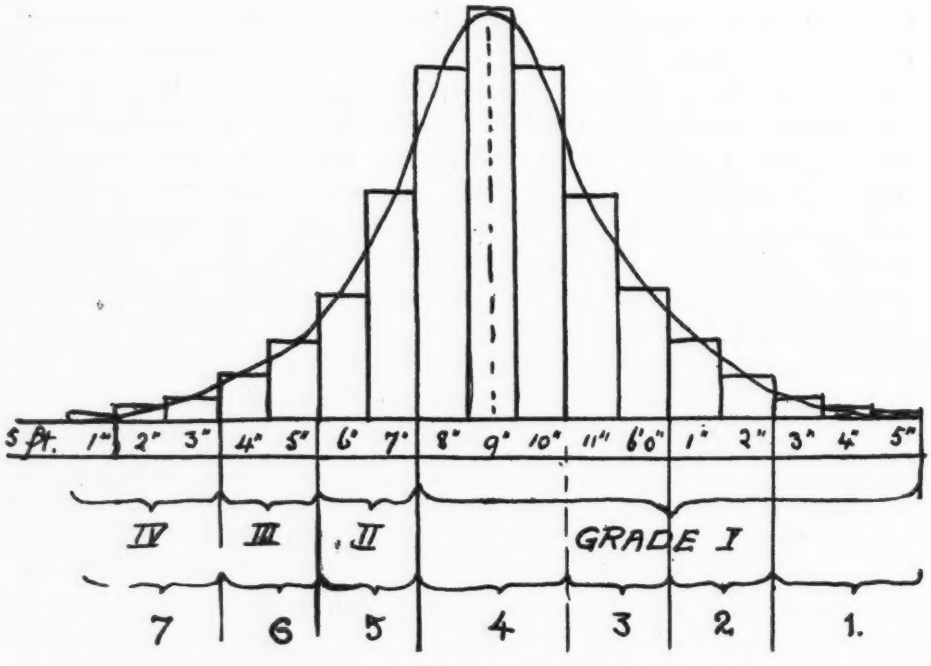

FIG. 3.

powerful reasons why they should not. Encouragement should be given for men to improve their grade, so to train themselves and live, that presenting themselves at stated intervals before the medical boards, they may be given the opportunity to advance into a higher class. Just as we have three grades below the mean, so in future should we recognize those grades above: seven in all.

In this way Grade I would contain the very pick of our manhood, a select class of some 2 per cent. of the whole, men of exceptional development, both physically and mentally.

Grade II, men specially well developed, either bodily or mentally, but with good average qualifications only in one of the two respects. Such men might be subdivided in IIa (physically Grade I) and IIb (mentally Grade I).

Grade III, good all-round men, distinctly above the average both physically and mentally.

Grade IV, the largest class of ordinary average men.

Grades V, VI and VII, would then closely correspond with the present grades II, III and IV.

Do you see where this leads us? It would mean that the best man, whatever his rank in life, would be given the best opportunity; hat employers would prefer for responsible posts men recognized

as belonging to Grade I over those of lower grades; that the best women, looking to the future, would seek to mate themselves with men of high and refuse those of low grade; that we would be impatient, for example, of being represented in Parliament by low grade men, that as a nation we would select and encourage the fittest.

Doing this, it would not be necessary to penalize further the Grade VII men by publishing a list of the same, or by segregating them—that, it is true, we might eventually become prepared for. It would, however, necessitate the Government publishing each year a list of Grade I, and preferably also of Grade II men. That would become, as it were, a national stud book; the only duty thrown upon the man who achieves these grades being that he should periodically, say every five years, present himself for re-examination and confirmation, or otherwise, in his category, on pain of having his name removed, due allowance being made, as aforesaid, for lowering of physical indices with advancing age.

I have, it will be observed, all through taken up only one half of the subject, and it may well be asked, what about the other sex? I would answer, here again do not attempt compulsory regulations. It might, however, well be made optional for girls when they attain to eighteen years to present themselves for examination before either the present medical boards or special boards of women doctors*, and if they measure up to Grades I or II, their names similarly should be published officially.

There is but one other note that I would make, namely, in order to counteract local influences acting upon the medical board, the definite classification of Grade I men should not be left in the hands of the Local Boards, but should be confirmed by a travelling medical assize of specialists empowered to make a thorough examination into the qualifications of every one admitted to this grade.

Here, therefore, I would urge as the programme for the new future:—continue the physical examination of young manhood; from its results determine where we are at fault, ruthlessly wage war against those conditions which lower the vitality of our people and thereby raise the general level of health and strength of our people. And with this, by the establishment of adequate grading, recognize and encourage the best and strongest among our people to the end that mating worthily they may propagate a sound,

*Such Boards, I learn, are already in existence, established in connection with certain of the Women's Services in the war.

strong stock and lead in the improvement of the race. All these generations, mankind has been groping after a proper method of accomplishing the end. It has tacitly acknowledged that good blood tells, has voluntarily put itself under chieftains and accepted the rule of their sons in the belief that the virtues of the sire descend and so has established the hereditary principle. And having established it, more and more of late years, as acted upon, the results leave much to be desired. And yet leaders there must be, and as we see in Russia to-day, the danger is that King Log of a Tsar may be succeeded by King Stork of a Lenine. What has been wanting has been some practical method of selecting the best blood of the nation irrespective of wealth and influence. Here, it seems to me, without pulling down the old, which to many of us means so much, without anything of the nature of a revolution, by the establishment of this new "Grade I" we would at long last lay the foundation of the true aristocracy of the nation.

FIFTEEN per cent. of the population in Bosnia is absolutely destitute. Typhus is on the increase, both in Bosnia and in Herzegovina. Although only eight hundred cases of typhus are officially reported, the American medical authortities believe that there are more than three thousand. Great difficulty is experienced by the authortities in inspecting Mohammedan homes, where three-quarters of the cases are believed to be concealed.

Mohammedan women refuse to be treated by male doctors, no matter how serious their illness.

A veritable plague of lice overruns the conntry. They are to be found everywhere, carrying with them the germs of typhus. One of the greatest needs of the natives is soap, of which there is none to be had. Typhus is following the lines of communication, especially the railways. American Red Cross personnel members of the Hoover Food Mission and American naval officers avoid the railways as the cars are infested with typhus lice. The American Red Cross is making preparations to aid twenty-two civilian hospitals in Bosnia and Herzegovina and six military hospitals which have been converted into civilian hospitals. Four small hospitals where typhus cases are being treated by American Red Cross doctors and nurses have been established. Aid is also on the way to five military hospitals in Dalmatia, at Cataro, Spalato, Sing, Mijini and Ragusa.

A PROVINCIAL MINISTRY OF HEALTH

By William F. Roberts, M.D.

Minister of Health New Brunswick Government

St. John, N.B.

WHEN I was invited by the Association to read a paper at its meeting, my first impulse was to regretfully decline, for, much as I appreciated the honour of being asked to come before this Society, one of the most influential in the world, the pressing duties, the multiple activities, which make up the life of one who attempts extended public service in conjunction with the stern need of earning a living, ought of right, to prevent my intrusion at this time. But, to be frank, I could not resist the temptation to lay before you a succinct notice of that in which 1 have become so distinctly interested—I refer to the new departure taken in public health matters in New Brunswick, as embodied in the Public Health Act of that province. It was no sudden notion on my part that led me to the serious consideration of public health. The matter had occupied my attention for years, in some one or other of its phases, and it had become habitual with me to give it what reflection I might, in the somewhat rare intervals of a strenuous city practice. Perhaps the first of these phases was the condition and lot of young children attending the public schools. Individuals, of whatever age, are capable of making an impression upon us, even when we are least reflective, but groups or combinations of persons, when regarded attentively, exert an even greater attraction. The fact that many of the units of such groups were seemingly destined to grow to maturity possessed of many physical disabilities which would handicap them in a very measurable degree through life, appealed to me, and, consequently one of the very first activities of public health in which I became really interested was the medical examination of schools. It is well known that "an idea grows with what it feeds upon", and the contemplation of the crying needs of the school-child called my attention to very many other aspects of preventive medicine. Upon looking around me I dis-

Read at the fittieth annual meeting of the Association, Quebec, June, 1919.

covered that while a very great deal was being accomplished in the cities and towns of our province in the way of conserving the public health, yet the grounds upon which such conservation was carried on were narrow in their scope, while outside such communities, it did not take long to discover that almost nothing was being done, even in the narrowest way, in the more sparsely settled communities of the province. A health act existed, not, as far as its purview went, at all a bad one. Well administered, it was capable of effecting great good and of saving health and life, but, with the exceptions noted, it was almost a dead letter over the greater part of the province. At first I did not see my way clear to any overt action in the matter. Almost immersed as I was in the surpassing anxieties of obtaining a livelihood, it seemed bordering upon the absurd for me to entertain any idea of mending matters, but an insistent call to represent my constituency in the local legislature unexpectedly opened the way to a realization of what had been, up to that moment, almost wholly academic and ideal. After making it abundantly clear to my friends that if I went into public life it would be mainly and chiefly for the purpose of improving health matters in my province, an agreement was come to, that if they would elect me, I, in my turn, would serve them in the way indicated.

The first step was to ascertain what was, really, the sanitary condition of the province, and what kind of an organization existed for the purpose of maintaining sanitation and the dictates of modern public health ideas. For this purpose I secured a sanitarian from abroad, so as to obtain a really detached opinion, and asked him to make a survey of the province with the foregoing object in view. This he did in a masterly manner, and outlined briefly, but very succinctly, the present conditions of affairs, and the means whereby it might be greatly improved. The chief question was, in order to attain to this improvement, whether to adhere to the old and time-honoured custom of a semi-independent Board of Health for the Province, working under and forming a sort of side department of a minister of the government already appointed, or to take a forward and, largely, untried step, and endeavour to produce a reformation by means of a separate Minister of Health. Indeed, pronounced prepossessions in favour of a separate and independent ministry and department of health had, early taken a strong hold upon me. I therefore chose the latter, and it is chiefly to explain and defend such a step that I am addressing you to-day, and not only so, but that the principle may be brought more widely to the

attention of the Canadian public. By-the-way-, similar action has already been taken or is in contemplation in two of the most important countries of the world—our own Dominion of Canada and in England, our Mother land.

What, then, were the features of the separate Department which appealed so strongly to me as to induce me to leave the beaten path and to launch out upon an almost untravelled and uncharted sea!

Briefly, they were these! As contrasted with a Board, a Ministry of Health is in direct touch with those most of all concerned, the people of the province themselves. To them he is responsible, precisely as a minister of finance, of public works, or of trade and commerce is responsible to the whole people. Further, the responsibility does not rest there. No government can dissociate its various departments or ministers one from another, and say that they approve of one, and deprecate the other. According to our well-founded and understood system of government, the whole ministry is a unit, and, in a way, each member of it is equally responsible with his fellow for success or failure. In a word, under our British system the government or cabinet stand or fall together, and the failure of one species of governmental service can not generally be atoned for by the probable success of one or more of the others. Consequently, by making the conduct of health matters really a part of the policy of the government, it, of itself, throughout all its ramifications, becomes vitally interested in the success or failure of the proposed public health scheme. Hence, the Minister of Health found himself not alone in his endeavours. He realized that behind him was the whole force of his government and his party, and that once grappled with, the question of health would be seen to be so absorbing and important, that no well-grounded opposition to the principle involved could be had, even from the professed opponents of the government and its party. This, really, turned out to be the case; practically, the only criticism of the bill which afterwards became the New Act, being based upon details altogether, and not upon the expediency of the movement.

It may be, and has been objected, that such a department with a political head, would be subject to reversals of policy upon the incoming of new political combinations; but such accidents are, I think, little to be feared. The question of the health of the people differs radically from most governmental problems. These problems themselves are constantly changing their aspect: often they disappear entirely with the advance of the times and changed

environment: not infrequently they assume totally different aspects and require a new departure in dealing with them. So much cannot be said of the public health. In the main the problem remains the same in its fundamentals. Various and varied methods may be applied from time to time to some of its particular phases, but taken generally, the health of mankind requires the same safeguards, the same care and is subject to the same malign influences as it was five thousand years ago. The old *insulae* of Rome did not differ materially from the modern sky-topping tenement of Edinburgh and other cities, and there is a close family resemblance in squalor and wretchedness between the slums of an American city of to-day and the hovels which used to shelter the myriads of Constantinople under the Byzantine emperors. And, again, speaking generally, like disorders require like treatment, and what was found fairly efficient in the tenth century is not to be lightly discarded in the twentieth. In fact, notwithstanding all the advance, and it has been immensely great, in the prevention of disease during the past half century, the proper administration of health laws of whatever kind they may be, provided they be rational at all, is in all likelihood the most important single feature in all public health work.

Now, it is in this very matter of administration that a Ministry of Health, rather than an appointed Board, holds the foremost place. Very frequently it is seen in other governmental service that a change of administration works for greater vigour and effect simply because it is a change. It is age-long knowledge, had from hard and bitter experience, that nothing is more liable to become hide-bound, antiquated and impossible in its efficiency than a board, no matter over what it is called to preside. The literature of fact and fiction both teems with harrowing examples. Boards lose the last vestige of remembrance of the object for which they were constituted, and become wholly obsessed with the profound belief that they exist for their own self-perpetuation; that they have in some way or another achieved a title to immortality, and that, I suppose by such achievement, they have become sacred things not to be polluted by unhallowed hands nor molested by the common herd.

The presence of a minister in and over such an organization, for organization there must be, is like the breath of spring upon a leafless bush. The minister has no time to become rusty or torpid or satisfied with his own excellencies. His constituents both friendly and otherwise protect him from these evils. The one group looks

upon him with kindly intentions, it is true, but generally plays the part of the "candid friend"—that most embarrassing and hateful of relations. The other group makes no pretentions whatever to friendliness, indeed, they frequently pretend the other way and no spot or blemish, either real or fanciful, either upon the minister or his work, will escape their scrutiny or their animadversion. Ministers, therefore, are not likely to grow stale and endure, which points, indeed, are those which chiefly characterize boards.

But the minister has an advantage over the chairman of the board in quite a different direction. It is very plain that neither minister nor chairman can do work without financial sustenance, and in general the only source of such sustenance is found within the walls of the legislative assembly or parliament. Within these walls the chairman cannot enter, and within these walls are many pigeon-holes. At the utmost he must make his wants known by deputy, even if that deputy be no less a person than the minister of that department of which his board forms but a part of a part. This deputy may do his best for him, but, until human nature changes, a deputy will always be a poor substitute, as compared with the interested individual himself, so far generally, as knowledge, ambition and passionate desire to achieve his purpose, are concerned. Deputies, as a rule, are comparatively languid creatures, whether the business to which they address themselves be either love or war, and the result in both activities is apt to be meagre and correspondingly disappointing. A third advantage, and perhaps one not less fruitful than either of the others, of a minister over a mere chairman and a board, is the enhanced status he gives to the business over which he presides. It at once makes this business the equal in every respect to each of the other services of the country. It raises it from a secondary to a primary point of importance, and assumes and maintains a place in the eyes and opinion of the whole country in no degree inferior to any other governmental activity. The laws of such an organization originate in and are supported directly by the supreme power of the State, and never take on the pull and drab character of mere regulation issued by a board and perhaps authorized through a descending scale two or more steps removed from the government itself. This very nearness of their relationship to the sovereign power gives them a dignity and consequent efficiency in no wise attainable by those emanating through delegated authority.

I feel I need not pursue this subject further. At best or at worst this is merely a note, not an address, and is designed not to

elucidate a system of public health organization, but to illustrate and establish a principle.

No apology is needed for placing the question of the health of the people as high in standing as that of any other human interests. It is in fact so high that in comparison all other interests are dwarfed by it. Of what use is wealth without health? But without health, even wealth itself tends to decline, not only with individuals but with states. Nothing is better known to you than the tremendous cost that preventable disease entails, both privately and publicly. It has been fully set forth upon this platform within the past two years and is everywhere being recognized and deplored. What profits it that a man-child or woman-child is born into the world to exist but a day, a month or a year? Of what benefit are millions of a population if they be feeble in spirit, decrepit in action, dull in mentality, through diseased constitutions? Nations without number have perished through these very causes, are perishing now, and will continue so to decay unless and until mankind realizes in bulk that being born is not the main thing, and that dying young is neither a sign of piety or respectability—but that the chiefest and most solemn duty of man here upon earth is to be well born, to live long and contentedly, and to die—if die he must—only when he is worn out by years and not by preventable disease.

ACCORDING to statistics compiled by Dr. M. O'B. Ward, of the city health department, the influenza epidemic of last November claimed 3,341 victims in Montreal, or 5·37 per 1,000 of the population. The average age of the victims was twenty-five years. Of the total number, 1,408 died of ensuing complications, pneumonia and bronchial pneumonia.

The cause of the epidemic is attributed to the great dampness and abnormally low temperature of October The temperature was 4·11 degrees below the average of the last forty-four years, and the rainfall was 4·32 inches more than usual.

ANTI-TUBERCULOSIS LEAGUES IN THE DISTRICTS OF SANITARY INSPECTION

By Dr. E. M. Savard, D.P.H.

Quebec

HUMAN health was hardly appreciated to its full value before the war. But it seems now, when the ghastly fray has ceased, that the world feels more its loss and realizes better not only the value, but also the frailness of human life. An intense sentiment is spreading, which sprung up naturally in the trenches, that is the sentiment of conservation.

In this lesson taught by the war, the physician found a duty. For he has to think not only of himself, but of others. And I may venture to say, what nobody will deny, that the men of our profession emerge from the war period with a keener if not deeper sense of their duty. They know that they must not be satisfied with attempting, in every case under their care, a problematical cure. They understand, more and more, that the physician has, indeed, a social part to play: that is to try and prevent.

They take accordingly to hygiene, a prophylaxy found more important than the other one, since it aims not only to the preserving of health, but moreover to its *increasing*.

And so, instead of the direct fight against the infectious germs —that is, the simple prophylaxy of contagion—they have come to recognize, they as well as the public, the superior effectiveness of hygiene, by which can be destroyed the powerful influences which make a bed for tuberculosis or other infectious diseases.

We have, as an illustration, the different methods employed in Germany and in England, respectively, in the fight against tuberculosis, and also the different results obtained.

In Germany, they thought only of destroying the bacillus of Koch, or, at least, of preventing its contaminating the human organism. But the measures taken in pursuit of that idea, isolation and disinfection, did not, indeed, as the compared figures of

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Read at the fiftieth annual meeting of the Association, Quebec, June, 1919.

mortality show, produce as good results as did, in England, the measures taken long ago to better the conditions and the individual. Those were the sanitation of dwellings, cleaning of cities, inspection of food, and so forth.

However, for all that, the special prophylaxy of contagion also belongs to hygiene. But, far from being the most important, it is only the eventual complement of the other sanitary precautions, whose protective effect is more far-reaching and which must always be tried as a means of prevention.

The hygiene inspector, therefore, cannot but devote himself to that fight against tuberculosis which of late has taken fortunately a new impetus in this province. He has to follow the example set by the public authorities in our province, whose generous attention deserves nothing but praise.

Let me mention the fact that the provincial government and the municipal authorities in the city of Quebec have just contributed a very substantial sum for the erection and maintenance of the Laval Hospital for tuberculous patients.

The citizens of Quebec also showed the deep interest they were taking in the question by subscribing the magnificent sum of $150,000 towards the same purpose.

I may add also that the provincial government is happy to profit by the Federal loan of twenty-five millions for housing purposes, and has already organized in the most practical and effective way, in order to abolish one of the main causes responsible for contamination and the spread of tuberculosis. A campaign is under way, under a competent director, to incite every town and city to take advantage of the generosity of the Federal Government, and begin building sanitary dwellings.

Public opinion, in a word, is now awakening and favors a methodical fight against the white plague, as we call it.

Never, as you see, was the time so ripe to engage in that fight on a broad basis, and never also was the need so pressing. For we must not forget that war trials and privations are bound to spread abroad the terrible sickness.

And again, I repeat, the hygiene inspector has a most important part to play in this organized fight; he cannot flinch, nor hesitate before this which I may call his main duty.

Bearing these thoughts in my mind, and being moreover long possessed with a conviction acquired through my connection with the antituberculosis dispensary of Quebec, of which I was the head for many years, I happened to become hygiene inspector for

the district of Fraserville. I could not then feel differently and, quite naturally I wanted my conviction to prevail.

The best and surely the most effective means of fighting the white plague, as it appeared to me after my experience of ten years, was the formation of a league.

I was, of course, also relying on the finding of the Royal Commission appointed by the present government for the prevention of tuberculosis, whose report plainly said that "the leagues against tuberculosis were one of the best means of fighting the sickness".

Being invited therefore to a meeting of the Medical association in Fraserville, in January, 1918, I took this opportunity before the physicians of the county of Temiscouata who were there assembled, of expounding, after my own experience in Quebec the valuable advantages and the foremost utility of a league against tuberculosis.

My suggestions were received with interest and good-will, and through the authority and prestige of men like Dr. Dubé, of Notre-Dame-du-Lac, and Dr. Parrot, the local member, as well as the enthusiasm of other highly public spirited confrères, they soon materialized. In fact as early as July, 1918, the league was formed and its birth was solemnized in a most fitting way.

Some remarkable speeches were pronounced on that occasion by Dr. L. F. Dubé, Dr. Arthur Rousseau, of Quebec, the late Dr. Fremont, Dr. O. Leclerc, and also Dr. Jarry, of Montreal. All those speeches, in which were found clear principles and golden words of advice, were published in a booklet.

And the inspector for Fraserville was glad indeed in a foreword to that booklet, to congratulate the League upon its publication and declare it to be a praiseworthy and most useful contribution to the fight against tuberculosis.

In fact, as one of the speakers had said: "It is most important that the antituberculosis education of the people should be made, that its attention be kept awakened, and especially that everyone should learn a wise habit of caution, and carefulness." An unceasing work of propaganda is wanted for that purpose, and I should think this substantial booklet a most happy form of it.

People were attracted by the authority of the names of the speakers, as well as by the human interest of the information contained in their lectures, and they read and are still reading the booklet. And so the principle obtains, which was uttered by Dr. Dubé, viz.: "It is necessary, before anything else, to conquer opinion, to circulate amongst all classes of society, in every house,

the clear and brief notions which will enable anyone to preserve himself and his family."

The provincial government, showing wisdom and intelligence, bought a thousand copies of that booklet which were distributed freely throughout the country.

This was the beginning of the movement. The mind of the public was attracted and prepared. So that it was easy to impress it more, when the antituberculosis exhibition of the "*Conseil Supèrieur d'Hygiéne*" of the province was exhibited, for a week, whilst a Farmers' Convèntion was on.

And here follows, in simple words, the story of what was done in Temiscouata; and, before going any further, let me remind you that all was accomplished in a sort of miraculous way without any money or any funds whatever.

"The first public action of the league was to inaugurate a 'clean-up week' throughout the country. And by a logical and progressive process, the movement was first explained in two articles which appeared in the local paper, the *St-Laurent*. The curate and the mayor of each parish received a card requesting him to help in every way in the movement, by explaining it to their people and urging them to fall into line on the set date.

The municipal councils were also asked to adopt a cleaning up by-law, following the line of the one adopted by the municipal council of Notre-Dame-du-Lac.

Then, in order to spread widely certain notions of hygiene, the league took the initiative of publishing a "*Clean-up Bulletin.*"

It contained a very striking appeal, urging not only the humanitarian advantage of preserving health and saving the young lives, but also the financial advantage of cleaning up. "It is proved and recognized," said the appeal in part, "that 60 per cent. of the fires are due to accumulated waste in the dirt left around the buildings, or the lack of care inside houses."

It was also pointed out that insanitary surroundings breeds diseases and is mostly responsible for the high proportion of infant mortality. And so on.

The *Bulletin* urged everyone to co-operate.

"The community," it said, "is to a certain extent responsible for the health of the individual; but the individual is no less responsible for the health of the community.

"Co-operation between the two is essential, but how to do this effectively is no less essential.

"Let church groups and clubs, school clubs, boy scouts and

all other associations assume leadership for a clean-up campaign in specified districts.

"So boys and girls, fathers and mothers, get ready, and be out with the water and soap, the broom and mop, the rake and hoe, and give your homes and yards a great spring cleaning.

"It is a good thing to be ready, when the time comes, for both front and flank movements on the citadels of dirt, dust and disease."

And, in fact, the greater part of the population went to it, with a war-like spirit, and made a clean job of it. The "clean-up" week met with a fairly great success.

It must be said that the municipal councils entered the movement very earnestly, for which they deserve the greatest recognition and praise. The councils, as well as some industrial railway companies, bought copies of this "*Clean-up Bulletin*," which were sold at $10.00 a hundred, and then distributed them at large.

The physicians of the county also showed a praiseworthy disposition, and most of them also bought a few copies of the *Bulletin* which they distributed freely to their clients. This was the only source of revenue the league ever had.

On Sunday, May 18th, every parish priest explained from the pulpit the purposes and advantages of a clean-up week, asking all his people to take a hand in it.

A few physicians also throughout the county gave on the same day one or two lectures on the same subject. One after mass, and the other usually after the evening service.

So that, everywhere, the people were properly appealed to and were quite willing to clean up according to the programme which had been printed in the *Bulletin*.

On Monday, they were directed to put everything in order, Carelessness, they were told, is responsible for most of the fires and the loss of so many thousand dollars.

On Tuesday, they were asked to take away all waste and burn it. Also clean the carpet, clean the cellar, clean everywhere, using freely water and soap.

On Wednesday, they were supposed to clean and adorn the surroundings of their homes, their schools and the church as well. Also to undertake the sowing of grass and trees, and in a word, the surroundings of the buildings and the roads with green.

Thursday was reserved for the turning of the useless and often dirty yards into vegetable gardens. They were also, on that day, asked to repair the fences and paint them anew.

Friday was a day of painting and decorating. It wound up,

on Saturday, with an urgent and most serious appeal to do something, in order to help, and make that fearful percentage of 20 per cent. of children, who die before they are one year of age, decrease. They were reminded that neglecting to keep the children clean and giving them bad food is worse than murder.

This was the course followed by mostly everyone and it certainly had a most happy and complete result. Of course, it is too early yet to give you any figures showing that sicknesses have decreased in number and in seriousness, but I am proud to say that the hygienic conditions in Temiscouata, which is part of my district, are now progressing and that the health of the people has increased accordingly.

But this was not the only satisfaction I received through this movement. I can already see that the neighbouring counties have been impressed by what was done in Temiscouata and they think now, not only of taking the same precautions, but moreover, of forming leagues, too, to fight against tuberculosis.

And I can foresee that the two counties of Rimouski and Montmagny at least, will soon have theirs.

Of course, you may know that the forming of such a league is not always an easy task. Forming a league is always a hard task. Anyhow, I would add that it is quite useless to try and form an anti-tuberculosis league in a county where there is no medical association already constituted.

This is the first logical step to enter into, for the hygiene inspector can rely on no one but the physicians of the county first of all.

Through the medical association of which he soon becomes a member the hygiene inspector can get in touch with the physicians of the county and secure, as was my good fortune in Temiscouata, their good-will and their co-operation. It might be a slow process, and take as long as for the "league of nations", but it is worth trying as in this case, in view of the magnitude of the results to be obtained.

The league aims, in the future, at the continuation and development of its action in a methodical and progressive way. This action will henceforth be centered about three main evils: flies, spitting on the floor, and unhealthy dwelling houses.

It is most important, of course, that the propaganda should at the same time be kept on systematically through lectures, and appropriate literature and publications. But the first need is of money, and the intention is to incite everyone in the county to

become a member of the league and subscribe a yearly fee of one dollar. This will allow the fight against tuberculosis to be pursued and even perfected by the establishment of a dispensary for instance, which I hope will soon be.

Again, I repeat, too great praise cannot be expressed for the earnestness displayed in the county of Temiscouata, which bears also its good effects upon the neighbouring counties, in this a truly humane and patriotic work for which generations to come will ever be grateful.

It has long been taken for granted that any physician is competent to give sanitary advice, and to head a health department, but in point of fact there is not one practitioner of medicine in five hundred who knows more than the rudiments of modern sanitation. The education, training, habits of thought and objects of work of a good physician are very different from those of an ideal public health executive. There is less in common between the ordinary medical practitioner's work and that of the public health worker than there is between either and the practice of dentistry. Professor Milton J. Rosenau, formerly director of the Hygienic Laboratory of the Public Health Service, and now the head of the Public Health School of Harvard University makes the following statements:

"Hygiene is included as a major subject in the curriculum of only three medical schools in the United States. . . . It has become necessary to establish special schools with graded courses to meet the demand of training men to become public health officers. It is slowly becoming recognized that the training received for the M.D. degrees, even in our best medical schools, does not properly fit a man to enter public health work. Sanitation and hygiene has become a separate profession."

The course of four years of study in a leading medical school comprises approximately 4,000 hours of work. The entire course in anatomy, as far as it applies to the work of a health officer, could be given in one hundred hours. We find then that out of the 4,000 hours of a medical course only 1,308 have special value for the public health worker. It would therefore be wise for cities and municipalities to appoint only doctors to those positions who have done special post-graduate work along these lines.

TUBERCULOSIS HOSPITALS AND DISPENSARIES

By H. A. Farris, M.D.

St. John, N.B.

IN the past, sanitarium treatment has been considered the all important part of the treatment of tuberculosis, and this must continue so for the middle classes. It has proved, however, highly unsatisfactory for the charity cases; while the temporary results have been satisfactory, the permanent results have not been commensurate with the cost, nor have home conditions been improved. In addition to this, a patient who has left a miserable home to live in a modern sanitarium for a few months, returns to find himself unhappy in his old surroundings, yet not in a position to better them. As a result he became a chronic neurasthenic, or returns to old conditions of living and work usually with a relapse. It seems now as if the time had come when great emphasis must be laid on home treatment for the charity cases, and this be accomplished by means of local hospitals and dispensaries as aids. Pratt, of Boston, has proved beyond question the splendid results that may be obtained at home, even under adverse conditions.

It is now generally recognized that infection is almost universal, and that we can probably accomplish more by improved home conditions, and by keeping up bodily resistance, than by spending large sums attempting to eliminate only infection. This does not mean that we ought not to pay attention to infection, but rather that we should lay most stress on keeping up resistance, and at the same time educating the patients and families how to prevent infection. Isolation of all bacilli carriers, and sanitarium treatment of all early cases, is needless and impracticable, but adequate hospitals and dispensaries must be established to make home treatment a success.

While there is much agitation, especially in the United States, for local tuberculosis hospitals, it has been chiefly for hospitals for advanced cases, and the greater the mortality the better pleased have the administrators been, as it proved to them that the right class of cases had been admitted. My experience, however, has

been quite contrary to this. It seems as if the hospital's first purpose be hospital treatment for any case needing such treatment. This would mean, of course, that the sicker the patient the more preference would be given him, but any case with acute symptoms should be admitted. This does not mean that these patients should be kept indefinitely, but as soon as they have improved sufficiently to continue home treatment, they should be discharged to their own homes under the supervision of the dispensary, unless there are special reasons for keeping individual patients in the institution for longer periods. Such patients on returning home will have learned the treatment and also what tuberculosis means.

While isolation has been considered the all important work of a hospital, this should be secondary. The hospital undoubtedly should be used for isolation of those cases who are extremely careless, or who are living among children under such conditions, as to make them a menace to the children. There should be a law by which any such patient could be compelled to enter a hospital, if he would not do so voluntarily. The less, however, this law has to be enforced the better for the tuberculosis work. The hospital should establish a reputation, whereby most patients will be only too glad to avail themselves of its privileges, and under proper supervision of home treatment compulsory isolation will rarely be needed. That a patient has bacilli in his sputum, does not mean he cannot be treated at home with safety to those about him.

A hospital should provide facilities for differential diagnosis. In few other diseases is diagnosis so time-consuming and expensive as in that of many cases of tuberculosis, and even in hospitals for advanced tuberculosis autopsies have shown that about ten per cent. are not tuberculous.

The hospital should put such diagnosis within reach of all classes; relieve the general practitioner of this class of free work, and also make the dispensary much more efficient, as the dispensary has not opportunity for observation or equipment for a complete diagnosis in doubtful cases. A patient sent to a local tuberculosis hospital for a period of observation does not seem to have the same stigma attached to him as has the one sent to a distant sanitarium.

The educational factor of the hospital must be considered highly important; it teaches friends and relatives how a patient should be cared for both for his own and relatives' good. My experience has been that this has probably been one of the most

important functions of the hospital, and even the local medical men have profited much from it. Every courtesy should be extended to visitors so as to get their sympathy with the work, and it is remarkable how much may be gained by a little extra attention to visitors. Lectures should be given to the patients and staff.

These hospitals should be affiliated with general hospitals, so that nurses from these hospitals should get at least three months' training in tuberculosis work. It is unfortunate that nurses trained in general hospitals know little or nothing of tuberculosis. If such ignorance of tuberculosis exists among those who are supposed to have such medical training as nurses, how can we blame the general public for being in ignorance of the treatment and dangers of tuberculosis?

The hospital should not be considered a place for chronic cases, who do not require active care or attention. Those who cannot be further helped by hospital treatment, yet may live for years and for practical purposes are homeless, should be sent to a municipal home kept for this purpose alone. Such a home could be most inexpensively run, yet provide the rest, food, and fresh air needed for their comfort. A resident nurse could be in charge of such a home, or the dispensary nurse could visit regularly, and any patient with acute symptoms requiring nursing care, should be sent to the hospital. The size of such a home possibly could be estimated at about one bed for every six or seven deaths per year. This estimate is based on an estimate made by looking over the chronic cases we have had to keep in St. John County Hospital for the past three and a half years.

Thus, by making the hospital a place for diagnosis, active treatment and education, it becomes very evident that the staff must be competent, and that the equipment must be most modern and complete. No tuberculosis hospital should be without a complete *x*-ray equipment. It should be provided with an operating room, facilities for giving sunlight treatment, either by natural or artificial means, pneumothorax treatment, tuberculin treatment, proper sterilizers, well equipped nose and throat room, and a dental room. The latter I believe is most important, and I think it can be arranged with the local dentists in most cities to provide attendants for such clinics. It should be unnecessary to mention the need of adequate porches for all patients.

The size of the hospitals is very important. In the United States it is advocated that at least one bed for every death per year, or better, two beds for each death, be provided. I believe,

however, that this size is not necessary if the proper dispensary facilities and home for chronics be provided. It seems that about one bed for every two deaths can be made adequate, if part of the amount that is saved by this be expended on the work in the dispensary and home for chronic cases, and much better results will be obtained. Needless to say, such hospitals will give a high *per capita* cost, certainly over $2.25 per day with the present cost of living, so that every bed that can be saved means much.

The expense of such tuberculosis hospitals should probably be borne in equal proportions by the provincial and municipal governments. Later, the Dominion Government will probably give some aid. At present, with the idea that hospitals are places of isolation and death, the municipalities bear practically all expense.

The location of tuberculosis hospitals is most important. They should be located very near a large centre, preferably on a street railway, but ample grounds must be provided. Unlike a sanitarium, which is better far removed from centres, a hospital gains much by being easily accessible.

The climate is of practically no importance. In St. John, which is considered probably the worst climate possible for such treatment, I can see no difference in the results from those in some of the much vaunted health resorts. Patients who have been sent home from other resorts to die, have made remarkable improvement on their return home to the St. John climate, and the same result having been secured in a so-called good climate, the climate would have been given the credit where the mental condition was the real cause. The good climate is where the patient is comfortable and contented and has proper care.

The dispensary must be the all-important factor in the home treatment of tuberculosis. The hospital really should be an adjunct of the dispensary, but no dispensary can be a success without the hospital as an aid. The dispensary must also have at its disposal open-air schools and day camps as well as the home for chronics mentioned above. The location of the dispensary should be central and easily reached. If the tuberculosis hospital happens to be so located, it would be ideal to have the dispensary in the same building. There are some advantages in having the tuberculosis dispensary located at a general hospital as there are so many other diseases to eliminate; the other immediate dispensaries can be used in making a differential diagnosis.

The all important thing in the dispensary is to have a physician or physicians sufficiently interested and sufficiently trained. He

should be in a position to attend at least two day clinics and two night clinics a week. It seems as if one nurse to every twenty thousand population is essential. It should be the duty of the nurses to keep accurate data of all patients, to visit regularly in their homes, to do any actual nursing that is needed, and to visit frequently enough to keep the patients under strict control. The success of such treatment will depend on the enthusiasm and training of such nurses, and it will only be by everlastingly keeping after them that patients will be kept taking proper care and rest at home. The rest with home treatment must be much more strict than in institutions where some latitude may be permitted owing to constant supervision.

By having these patients nursed in their own homes, such nursing will gradually reform the home conditions and not only will the immediate patient be benefited, but the family as well will have been under supervision for early symptoms of tuberculosis or poor health. The nurse should gather all suspect cases into the clinics and have them regularly examined. Needless to say, a patient convalescing under such conditions will have much greater chances of remaining well.

There must be great co-operation with the board of health.

In addition to free diagnosis and supervision of home treatment, the educational factor of a dispensary should be a most important one. This should be accomplished by literature, bulletins, lectures, publicity campaigns, etc. It should be the duty also of the dispensary to provide medicine, absolutely essential food, clothing, and even crude porches or chairs needed. With school inspection now becoming universal, the need of open air schools can be easily recognized. These schools should also be under supervision of the dispensary nurses, and would add little to the cost of ordinary schools. Day camps should be provided, as these in many places have given splendid results at a minimum expense.

The expense of providing the dispensary should be borne by the municipality. This should include pay for the rooms, staff, medicines and absolute necessities. Extra food, porches, chairs, etc., should be provided by private funds. I think it is very important in this work that we keep the public interested by making it necessary for them to provide some of the finances needed, and by getting them interested in home conditions. We are doing a great work. It is only by educating the public to the need of improved home conditions that we can hope to go far in this work.

SOME DANGER SIGNALS IN CARDIOVASCULAR DISEASE

By James Third, M.D.

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I HAVE no epochal discovery to announce, no theories to advance and none to defend. I simply bring to your notice a half-dozen clinical observations that seem to me worthy of your consideration. I confess at once to some measure of scepticism towards all things traditional. In these days we take too much for granted. Too often we judge of the seaworthiness of a ship from the appearance of her upper decks. Not infrequently, when the self-same ship is ordered to the dry-dock, the bottom is found to be wholly unworthy of its glittering superstructure. It is well perhaps that we should systematically and regularly bring our theories and our practices into the dry-dock and subject the supporting fabric to a careful examination.

Prognosis is visualizing the future with such knowledge as we have at hand to-day. No part of our science or our art is more difficult, and none more important, or more comprehensive, since prognosis includes both diagnosis and treatment. Moreover, prognosis is not dependent on the condition of any one organ, but on the functional activity of all the organs, and especially of those more or less closely related, physiologically, to the one called upon to bear the brunt of action. Prognosis, in a word, depends on a general survey of the whole physical and psychic condition of the patient.

No tissue lives to itself or entirely by its own endeavour. Each contributes its share to the sum total of human effort. This contribution may be in the nature of an enzyme to move up a step the metabolic process, of a hormone to actuate a distant secretion, or of a neural impulse to energize a sleeping muscle, or control some vital protoplasmic activity, but throughout all there is the same undying principle—interdependence, interdependence, not

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Read at the fiftieth annual meeting of the Canadian Medical Association, Quebec, June, 1919.

alone in the processes of the tissue's development, but in all its functions, the purpose of its being.

In distress, each organ speaks to us in a language all its own. This language, we must interpret; nor does our task end here. Too often there is a jargon of voices, as if the ear were at some rural telephone; but this, too, we must decipher. The task is by no means so difficult as it would appear at first sight. How often have we puzzled our brains over a Latin sentence until our eyes rested on a noun or verb that we recognized, when all at once the mists seemed to lift. So it is in the prognosis of cardiovascular affections. There are a few outstanding signs and symptoms that spell danger, and when we recognize these the meaning of all the others can be worked out and the whole disability fairly assessed.

Myocardial degeneration, if we exclude that due to acute infections, is not likely to be present before middle life. Arteriosclerosis is an expression of age—age as told by years of normal life or by days of stress and strain. Failure of compensation, or better—heart-failure with congestion—is always the result of myocardial change. The dictum of Graham Steell[1], that "no one dies from mitral regurgitation", may, with little variation, be applied to any of the chronic valvular lesions. All, in the final analysis, depends on the condition of the myocardium. The only two lesions of the valves of the left heart that call for special attention, are aortic regurgitation and developed mitral stenosis, and the prognostic significance here rests not on the condition of the cusps, but on the fact that these lesions signalize the invasion by the morbid process of the heart muscle itself. When the strain on the cardiac muscle goes beyond its physiolgical capacity, then no matter what may be the condition of the valves, the heart as a whole is forced to run up a signal of distress. The first signal is usually breathlessness.

Men, like plants, get a great deal of their nourishment from the air.

It is extremely difficult to analyze the fundamental cause of breathlessness. Physiologists tell us that changes in the respiratory rate are due largely to alterations in the stimuli reaching the respiratory centre. Increased concentration of the H-ions in the blood—acidosis—is undoubtedly the most frequent, but not the only cause of breathlessness. There are two acid groups—the volatile and the non-volatile. The entrance of these into the circulation would soon render the blood acid, were it not for the provision made for their prompt excretion, the CO_2 by the lungs,

the others by the kidneys. Anything, therefore, that causes overproduction of these acids, or interferes with their free elimination, will tend to cause breathlessness. Another possible cause of breathlessness in cardiac cases is diminished vital capacity of the lungs—loss of alveolar space.

Peabody and Wentworth[2] have shown in a series of interesting experiments the relation of the vital capacity of the lungs to breathlessness, and other signs of decompensation. In Group I of their series consisting of twenty-five cardiac patients, the vital capacity was 90 per cent. of the normal. All had well compensated hearts. None of them showed any evidence of what might be termed breathlessness. Group II consisted of forty-one cases whose vital capacity was between 70 and 90 per cent. of normal. All of these gave a history of breathlessness on any unusual effort. Group III consisted of sixty-seven patients with a vital capacity ranging from 40 to 70 per cent. of the normal. All of these suffered from breathlessness on moderate exertion. Group IV consisted of twenty-three cases with a vital capacity of 40 per cent. or less. In all of this group breathlessness was a marked symptom even during rest.

Just why these patients with symptoms of decompensation should show decreased vital capacity is not quite clear. Peabody lends support to the theory that low vital capacity depends on a loss of elasticity of the lung tissue, brought about by engorgement of the pulmonary circulation due to back-pressure from a weakened left heart. There is some clinical evidence to support this theory, in the fact that disease of the mitral valves brings in its train, breathlessness at a much earlier stage than that of the aortic valves. Further investigation is needed, but whatever may turn out to be the fundamental cause, the fact remains, that breathlessness is probably the most important subjective symptom of cardiac disease. Then it should be remembered that breathlessness of purely cardiac origin is always accompanied by a general cyanosis. Lewis[3] lays special stress on this point.

It would be an error, however, to conclude that no form of heart disease exists when this symptom is absent. In the early stages of both mitral stenosis and aortic disease, breathlessness is usually absent, and appears only as a definite symptom when the disease has invaded the myocardium.

The heart quickens and the respiratory rate increases in all of us, young or old, as a result of any unusual experience or effort, but the causal influences are transitory, and a rest of one or at most, two minutes, if the myocardium is reasonably sound, will

restore the normal rate in both. A slow return of pulse-rate should be the subject of careful enquiry. The value of the exercise tests in deciding the measure of cardiac efficiency cannot be over-estimated.

If we exclude the breathlessness of the neuroses, the severe anæmias, lung disease, acute infections, and intrathoracic growths, then the degree of breathlessness especially in a man past mid-day, is a fair measure of the cardiac inefficiency.

All the organs of our body have, in addition to their current account, a reserve fund. Thus, we have a cardiac reserve, a pulmonary reserve and a renal reserve. Exhaustion of any or all will cause breathlessness of an extreme degree, and a fatal issue. This we see in the heart case, bolstered up in bed, with distended veins, swollen legs and an engorged liver.

Then we have the man of sedentary habits of say fifty-five or sixty, who begins to complain of breathlessness on an easy grade, or on the stairs. We may safely infer that his cardiac reserve is diminished probably 20 to 30 per cent., and it becomes our duty to conserve his energy and to search for the cause of the overdraft.

Again, we have the patient who is short of breath even while walking slowly on the level. His cardiac reserve is greatly diminished—is in fact well nigh the vanishing point. In these cases the history may reveal the fact that the onset was gradual, and that the disease had actually been in existence for months or even years.

The so-called "cardiac asthma" is always a serious affection, The attack resembles ordinary bronchial asthma, and comes on about two or three o'clock in the morning. The condition occurs most frequently in elderly people with myocardial degeneration, high blood-pressure, and sclerotic arteries. If accompanied with angina or alternating pulse, the patient will not likely live more than a few months.

True angina is no less serious. It is a signal of some degree of heart exhaustion. It may be interpreted as too much work, too much worry or a lengthening of the shadows. The patient with typical angina is at least sixty-five, no matter what the calendar may show. In an obese patient, free from syphilitic taint, without much cardiac enlargement, and with only a moderate increase in pressure, the prognosis is somewhat better, providing he will reduce his weight to the normal for his years and height, and agree henceforth to live down to his heart level.

We next seek confirmation of our diagnosis by physical examination of the chest. It is generally agreed by both clinicians and

pathologists that if there is serious myocardial change—change sufficient to produce symptoms—enlargement of the heart will be found. Now enlargement of the heart may be due to either hypertrophy or dilatation, or to a combination of the two. In the chronic cases at least, it is likely to owe its existence to the combined lesion.

The simplest and best guide to the size of the heart is the position of the apex. If the maximum apical impulse with the patient fairly on his back, is in the fifth inter-space and within from three to four and one-half inches of the mid-line, the distance varying according to the weight and skeletal development of the patient, and providing, too, the heart is not displaced, then there is no ventricular enlargement worthy of consideration.

I have often observed, and with some amusement, the ease with which students, who knew the surface markings of the heart delimited by percussion, its borders, and the difficulty experienced by others, with quite as sensitive an ear, and an equal training in percussion, but without any knowledge of the surface markings. The fact is, most of us, unconsciously perhaps, keep our eye on the apex and the nipple in percussing for the left border, and on the margin of the sternum when endeavouring to locate the right.

Quite frequently, I find on history sheets under the heading physical examination, "Heart enlarged to right, 1 cm." or "Heart enlarged to the left, 1 cm." Well, I confess that this is a refinement of diagnosis with which I am not familiar. I know of no method of making a physical examination of the heart in the living subject that will give such precise results. By the *x*-ray, orthodiagraphic method[4], the size of the heart can be made out, but even here I should not like to say the error was much below 1 centimetre.

If any of you will take the trouble to watch the movements of the normal heart for a few minutes as silhouetted on the screen, you will, I think, agree with me, that diagnosis of an enlargement of 1 cm. by physical examination is a physical impossibility. Thousands of *x*-ray examinations by the orthodiagraphic method have justified the statement of the older clinicians, that, if the apex is in the normal position, there is no pathological ventricular enlargement.

Heart murmurs. Murmurs alone have little prognostic significance. The most frequent apical murmur is the so-called cardio-respiratory. Opinions differ as to its cause. It is heard best at the apex, but it may be heard over a wide area of the precordium, and occasionally even at the angle of the scapula. It is a short high-pitched systolic murmur, most audible during inspiration.

It occurs usually in the nervous. If, after a deep inspiration, the breath is held, the murmur in 99 per cent. of the cases is lost, and for this reason, is regarded as exocardial. It has no prognostic significance.

A systolic murmur heard at the apex, transmitted to the axilla, with accentuation of the second pulmonic, in a patient who has had a definite attack of rheumatic fever is most likely of organic origin. Even with this, however, if the heart is not enlarged, and the patient has good exercise tolerance, then, from the standpoint of prognosis, it may be disregarded.

Mitral stenosis is usually, but not always, a serious condition. All histories must be accepted with caution. The unwilling recruit wishes to show that his heart is defective, the applicant for insurance, that his heart is sound. Leaving these two out of consideration, there is still a considerable class without "axes to grind". In these the history may be our best guide as to the gravity of the lesion. Mitral stenosis in the young accompanied by presystolic and mid-diastolic murmurs, and a definite thrill, is always a serious condition. The interval elapsing between the rheumatic or choreic attack, and the development of the pre-systolic murmur is often a valuable guide to prognosis—the shorter the interval, the more grave the prognosis and vice-versa. In a man of say forty-five, who had his only attack of rheumatic fever in childhood, and who has at present but a slight presystolic murmur, we may safely infer that the rate of stenosis is very slow, or that the process is absolutely stationary. In either case the patient will probably live out his expectation. In the progressive lesions, auricular fibrillation usually ends the scene. With the onset of this abnormal rhythm, there is always a sudden development of breathlessness.

Aortic disease is attributable to rheumatism or chorea in about half our cases. Syphilis and arterio-sclerosis claim the remaining half. "After puberty the endocarditic variety of aortic insufficiency is consistent with good heart health for years, because the valve changes are not necessarily progressive, the aortic root is not involved, and the coronary arteries, orifices, and stems are free. On the other hand, the degenerative form, usually syphilitic (and the war has taught us how common is the variety), is always serious, because the sclerosis is progressive, the root of the aorta is involved, and the coronary arteries, orifices and branches, one or other, or both are attacked. These vessels control the prognosis; if involved, as they may be at the sinuses of Valsalva alone, the heart muscle cannot be healthy.[5]

Let us next consider briefly the much overwrought question of blood-pressure. The instrument dealers are not the only sinners. The value of the sphygmomanometer in diagnosis and prognosis is great, but not as great as some would have us believe. Blood-pressure alone should never be taken as a basis for either diagnosis, prognosis or treatment. It should always be considered in relation to the state of the arteries, the size and exercise tolerance of the heart, and the condition of the kidneys.

In doubtful cases it is best to estimate the blood-pressure, systolic and diastolic, several times by the auditory method, and take the average. A systolic pressure constantly over 160 with a diastolic of 120 in a man under sixty years of age, calls for a thorough investigation of the whole cardio-vascular-renal system. The patient is probably in the early stages of an interstitial nephritis. If the diastolic pressure is constantly under 100, the systolic reading should not be taken too seriously. Emotion, etc., will send the systolic up but has little or no effect on the diastolic. Most patients of sixty-five years who have a diastolic pressure constantly in the neighbourhood of 160 mm. Hg., will have a hæmorrhage into the vitreous or perhaps into the internal capsule within a year.

In wasting diseases where the exercise tests cannot be given, the blood-pressure estimation may be a valuable guide to prognosis. Patients suffering from typhoid show an excessively low systolic pressure[6]—the average being between 80 and 90. The diastolic in these cases usually lies between 65 and 70. The more closely the systolic and the diastolic approach, the more unfavourable the prognosis. It should be remembered that if the arteries are markedly sclerosed, the blood-pressure readings should not be taken as a guide to either prognosis or treatment.

The Renal condition. Renal affections are attracting a great deal of attention at the present time. The recent experimental work of Bradford, Wilson and Bashford[7] on "filter-passers", bids fair to revolutionize many of our ideas with regard to the etiology, prognosis and treatment of, not only renal, but many other diseases. We shall await with hope further confirmation of their work. In the meantime we can but discuss the subject with such light as we have.

In all patients with high blood-pressure, the urine should be examined carefully. It is well to have day and night specimens collected separately. A patient who suffers from nycturia and who passes more than 400 c.c. during his resting hours, unless there is sufficient cause, *e.g.*, greater intake of fluids, has probably some

interstitial nephritis. A specific gravity that shows little or no fluctuation during the twenty-four hours points to the same conclusion. I have frequently found a trace of albumin with granular casts in a double centrifuged specimen where neither were found otherwise. In double centrifuging I fill both tubes with urine and let the centrifuge run for the usual period. I then pipette out the lower half of contents of both tubes and put them into a third. This is centrifuged again from three to five minutes with water in the balance. The precipitate is then examined in the usual way.

Another test I should like to mention and one, too, quite within the range of the general practitioner. I refer to the functional renal test of Geraghty and Rowntree.[8] Its great value in prognosis in nephritis cases is now fully established. I know of no other test, so easy of application, that will reveal with the same degree of certainty, the functional derangements of the kidneys. Normally from 40 to 50 per cent. of the phenol-sulphonephthalein is excreted in the first hour and fifteen minutes, 15 to 20 per cent. in the second hour and 10 per cent. or less during the third hour. Some nephritic cases may eliminate but 25 or even 10 per cent in the three hours and a quarter. In an analysis of my cases, I find patients with high pressure, diminished urine, but increased albumin and casts, who are excreting 25 per cent., live from three to four months, while those under the same conditions excreting only 10 per cent. live but three or four weeks.

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Editorial

THE ADDRESS IN MEDICINE

THE present time is rich in centenary anniversaries, for the end of the first quarter of the nineteenth century was an epoch-making period. Peace reigned again in Europe, and the generations who had lived through the French Revolution and the Napoleonic wars were as rich in great men as the day was in great events. In England, and still more in France, the Hippocratic methods of exact clinical observation and the study of pathological anatomy had come into their own, and had together given birth to the great modern science of clinical medicine. With the combination of Bichat and Dupuytren, Corvisart and Laennec, the great day of French medicine had dawned, and the formation of modern clinical methods, in which detailed bedside observations are compared with the results of autopsy, had been formally established.

No more timely subject could have been selected for the Address in Medicine than the life of the great Master of the art of Physical Diagnosis, whose "Treatise on Mediate Auscultation" was published just one hundred years ago. There is no greater inspiration than the so-called biographical motive, obtained through the knowledge of great men. This applies as truly in the art and science of medicine as elsewhere, and the lives of the great physicians of the past should be familiar ground to the practitioner, and his knowledge of them at least as intimate as that of his drugs. Dr. Thayer's vivid presentment of Laennec's life is valuable in just this way. The personality of the man is before us, and the analysis of his life shows clearly those qualities of industry,

accuracy of observation and enthusiasm for fact, on which, with the simplicity and acuteness of genius, he laid the foundation of the remarkable knowledge which he gained of diseases of the respiratory tract. His early struggle against adverse circumstances and selection of the best conditions for his work, his youthful association with the great pathologist Bichat and his own important contributions to pathological anatomy, his close study of the writings of Hippocrates, whose principles as applied to the Practice of Medicine it is interesting to note, formed the subject of his graduation thesis; his successful combat of the quackery of his day, and last but not least, his sympathy for the Breton poor, reveal themselves as the hallmarks of one of the great clinicians of all time. They are the background of a life in which his great discovery of mediate auscultation seemed but a link in the logical sequence of events, and the wonderful extent to which he used it in the enunciation and definition of respiratory phenomena was the natural outcome of an adequate rendering of his daily task by a master workman.

Emphasis is well laid in the Address on the fact that Laennec brought our knowledge both of the pathological anatomy and the physical diagnosis of respiratory diseases to a point to which practically nothing has been added in modern times; and also that, amidst the great advances in laboratory procedures to-day, too much stress cannot be laid on the importance of an exact knowledge and a conscientious reading of what may be called the alphabet of diagnosis, that is, the physical signs presented by the patient and the underlying pathological condition, in the translation of which Laennec may be called our first and greatest apostle. The same danger that assails the therapeutist in availing himself of the vade-mecums of pharmacy is with us to-day in the use of laboratory tests as replacing, instead of simply confirming, bedside observation and experience.

Canada is still a young country, and for that reason the historic sense may be said to be but just awakening among us.

This has received a great impetus through the War, which has carried our men to distant and more ancient lands, and has aroused us to a knowledge of the patriotism that lies within us all. At this time the study of medical biography in our Universities should receive a much-needed impetus, and the minds of our students be more keenly awakened to the facts of the History of Medicine. Let us hope that the Association may help to point the way in this important matter, and that Dr. Thayer's scholarly Address, which was received with so much interest, may be the forerunner of many other papers on our annual programmes along similar lines, which may make us more intimately aware of our great inheritance from the past, which is at once the pride and the hope of our Profession.

THE ADDRESS IN PUBLIC HEALTH

ALTHOUGH the work done in sanitation during the war has never been criticized to any extent, it is still timely for the public to have the facts placed before it, as was done in Colonel McCullough's address at the Quebec meeting. In many ways it is to be regretted that time did not permit of his giving some of the details of how these excellent results were accomplished. This is necessary, as the general public think many of the recommendations of the health officer are unnecessary and vexatious. It was only accomplished by first educating the higher commands and getting their support, and then by enlisting the help of all ranks from the senior officer to the humblest private.

The remarkable record of losses from disease is all the more creditable when one considers that for nearly four years the armies were stationary in one long line of trenches extending from the North sea to Switzerland. It was only here and there that some slight advance or retirement took place. Between the opposing trenches lay "No Man's Land", where

it was never safe to even gather the dead for burial. In all this area were countless bodies either not buried at all or just merely covered, so that frequently the grave was opened by a succeeding shell.

Of the infectious diseases, measles and mumps caused the greatest annoyance to the authorities in France. This was so much the case that it became necessary to quarantine all reinforcements coming from England before they were allowed to mix with the active battalions. This procedure was justified, as until it was done it was never possible to rid some of the units of these infections.

The announcement that the salvarsan remedies will be available at greatly reduced prices owing to the Ontario Board of Health being granted a license to manufacture them, would indicate that this province is working along the right lines. It is to be hoped that the other provinces will secure these remedies for their population at a price not greater than that secured in Ontario.

THE DEPUTY HEALTH MINISTER

ONE of the many good effects of the great war has been the object lesson it has afforded in the triumph of hygiene and preventive medicine. The restrictions placed upon the army—the lessons enjoined by the medical officer and the district officer—may have been irksome—but no soldier can have been so dense as not to see the results upon himself and those around him, and all interested in the soldier, the whole nation in fact, read eagerly in the daily papers the story of how by inoculation and the detection of carriers one infectious disease after another has been conquered. Thanks therefore to the war, what the Canadian Medical Association and other bodies interested in the well-being of the public

have for long petitioned in vain has at last come to pass, and the Dominion has its Federal Health Department.

A portion of its duties, the control of quarantine and epidemic disease, have hitherto been supervised by the Minister of Agriculture. Other sections, notably matters like maternity and child welfare and the gathering of adequate morbidity and mortality statistics for the whole Dominion will need not a little statesmanship, in order to bring about the co-operation of and the enforcement of common or standard regulations by the different provinces without trespassing upon the autonomy of their provinces.

It is generally believed, as we go to press, that the Hon. Mr. Rowell will be appointed first minister. If the interest shown by him in our overseas hospitals, the care of the soldiers, and his intelligent interest in medical problems may be safely taken as an index, this is an excellent choice.

The Deputy Minister has been appointed in advance from among many well qualified possible holders of the post.

Colonel John McCullough was for long years associated with public health work in the Province of Ontario, first with the Provincial Board of Health, later in addition as Professor of Hygiene in the University of Toronto. In Flanders he rapidly came to the front as a sound and practical field sanitarian. His excellent work as head of the sanitary section of the 1st Canadian Division lead to his being chosen as head of the British Army Committee upon the water supply of the Ypres area, and later, in 1916, as Sanitary Expert and Consultant to the 2nd British Army for the whole Flanders area. He was here so much at home and of such value that it is doubtful whether, both for himself and for the whole British Expeditionary Force it was not a loss and a mistake to recall him to London as Sanitary Expert on the staff of the D.G.M.S. there, for he is better at carrying out work in the field than at the writing of reports in an office. But a big opportunity is now afforded to him and we look forward to his rising to the occasion. Much depends upon him, and if

a genial manner, a bright humour, and intimate knowledge through birth and upbringing of both elements of our people, make for success, he is specially well endowed for the post.

A QUESTION has arisen in New York as to the employment of nurses as anæsthetists. Mr. James Taylor Lewis, counsel for the State Medical Society, urges the restriction of the administration of anæsthetics to licensed physicians and the exclusion of nurses from doing such work during surgical operations.

Mr. Lewis cited the law which prohibits any one without a doctor's license from giving ether, or chloroform, or other poisonous gas to a patient, except when directly and continuously supervised by a physician, and he held that criminal action should be brought to prevent the continuation of this practice in certain hospitals, as not only was the law being violated, but life was endangered.

If it could be shown that nurses, after special training, were competent to administer anæsthetics, then, he contended the law would have to be changed so as to give the nurse the right to do the work under the proper restrictions.

Mr. Lewis recently read a paper on this subject before the Society of Anæsthetics.

THE Western University Medical School has announced that the course of study leading to the degree of M.D. extends through a period of six years with the session of 1919–20, or future sessions, except that matriculants, who postponed the study of Medicine on account of enlistment in the Canadian Expeditionary Forces, may register for a course to be completed in five years.

This decision has been reached in order that the men may not lose too much time due to service in the war.

Toronto and Queen's Universities pursue the same plan.

The incoming class this year inaugurates the six-year course, and it is understood that the schedules laid down will be followed in all the Medical Schools through the Province of Ontario.

CENTRES for research is what is being planned in the immediate future for Ontario hospitals. This is in line with the forward movement now progressing throughout the Dominion. By reason of the large number of physicians and nurses who volunteered for their country's service during the period of the war the Medical Hospital Staffs were reduced to a minimum. Recently the Provincial Secretary called together in Conference, all the Ontario Hospital Superintendents. It is the intention to rebuild and strengthen the Staff of Medical Assistants and nurses at the various hospitals, to cope with the ever increasing need for such work, and develop at each the medical and scientific side of hospital life, particularly in research work, thus placing these institutions in the front rank of Medical work as it is understood to-day.

The Ontario Hospital at Whitby, and the fine institution at Guelph was, shortly after war was declared, handed over to the Department of Militia ahd Defense for use as Convalescent Hospitals for returned soldiers.

It is aimed to create in each hospital district a medical centre located at the Ontario Hospital for the particular district which can be regarded from all sides, and particularly by the Medical fraternity, as the one locality where the highest attention will be paid to scientific and professional advancement.

Correspondence

To the Editor of

The Canadian Medical Association Journal:

Sir:—

In your leading editorial of the July issue of the Journal, which discusses the work of the recent meeting of the Canadian Public Health Association, you refer to the venereal disease problem and say that the publicity given the figures showing the prevalence of syphilis in Canada should prove a surprise to most citizens and even to some physicians, and, further, it was stated that at present there are in Canada half a million people suffering from this disease.

I am in full sympathy with the movement that has been launched to attack the venereal disease problem in Canada, which I regard as a grave one, and would assist in every possible way to further its object, but I must protest against the use of statements evidently intended to promote the success of the movement but which are certain, on examination, to have a very different result.

One of these is to the effect that there are, at least, five hundred thousand cases of syphilis in Canada, in other words, that out of every fifteen or sixteen Canadians, one has this disease.

When, now eight years ago, the Royal Society of Medicine, of London, memorialized the Imperial Government to appoint a Royal Commission to consider, and report on, the problem of syphilis as it affected Great Britain and Ireland, it estimated that one half a million people were affected with this disease, an estimate that surprised that portion of the public which gives attention to such matters, and, as I recall, was received with protest in many quarters. As the population of Great Britain and Ireland was, before the war, about forty-seven millions, the estimate would have postulated that one out of every ninety-four inhabitants was so affected. Now, if a little more than one per cent. is an excessive estimate for the prevalence of syphilis in Great Britain and Ireland, where there are large cities and towns with large slum sections in which venereal disease flourishes as it does nowhere else, what must be said of the estimate that over six per cent. of the population of Canada is syphilized?

I will admit, as I know for a fact, that amongst the out-door patients of such hospitals as the Toronto General, the Montreal General and the Royal Victoria, who come chiefly from the slum districts of our cities, or who hail not only from the unfortunate but also from the wastrel class, the proportion of syphilis is large. Indeed, some four or five years ago the application of the Wassermann test to the out-door patients of the Toronto General Hospital indicated that about one out of every twelve patients, or over 8 per cent., was affected with syphilis. Will it be contended, however, that this proportion should be a guide to indicate the prevalence of syphilis in the whole population of Canada? It would be as absurd as if the prevalence of syphilis in Great Britain and Ireland were determined from the prevalence of the disease amongst the out-patients of the great London hospitals, or the prevalence in the United States from the proportion in the out-patients of the hospitals of the larger American cities.

I am firmly of the opinion that such wild estimates of the prevalence of syphilis in Canada are doing the cause of Public Health a great deal of harm. They tend to undermine the confidence of the public in the sincerity of all concerned in publicly promoting measures furthering Public Health. Indeed, a very prominent educationist from one of the Western provinces, in conversation with me recently, stated that, in the West, the estimate of half a million people in Canada afflicted with syphilis, an estimate that was disseminated by the Canadian Associated Press after the Ottawa meeting at which it was given publicity, was received with great scepticism and, in some quarters, with ridicule. Is that a desirable result to achieve?

What the exact prevalence of the disease in Canada is no one knows. There are no data on which to base such an estimate. It certainly is not more, but less, prevalent in Canada than it was in the British Isles before the war. In that case it would be less than eighty thousand in the whole of Canada, and probably not more than forty thousand. Is that not high enough to be alarming? Why arouse distrust in the public mind by giving publicity to exaggerations which must be eventually regarded as gross?

A. B. MACALLUM.

OTTAWA, *July 23rd*, 1919.

EDITORS' NOTE.—The editors appreciate the remarks in the above letter. The figures were quoted in the editorial as coming from one who has done a great deal of work on this subject in the

last few years. As the figures of half a million and forty thousand respectively are simply estimates made by different authorities, we must leave it to our readers to decide who is nearer to being correct. It is thought, though, that there is more danger at the present moment in minimizing the seriousness of the venereal problem than there is in overestimating it. Unfortunately our governments never act in health matters until they are driven to it by public opinion and the latter can only be aroused with difficulty.

Obituary

DAVID HEGGIE, M.D.

Dr. David Heggie, a veteran physican and highly respected citizen of Brampton, passed away on July 19th, at the advanced age of eighty-two. He had been in poor health for a number of years and had failed rapidly of late.

He was born in Edinburgh, Scotland, coming to Canada about sixty years ago. He took up his residence in Brampton, Peel County, and through his long life always practised medicine in that town. He graduated from Queen's University.

Dr. Heggie took a prominent part in the affairs of the town until recent years and was an active educational worker and a staunch Methodist. Of his five children three sons survive him, who have all embraced their father's profession.

He was a notable figure throughout the whole district, and was universally beloved by his patients.

Dr. P. F. Coleman passed away, July 15th, in St. Michael's Hospital, Toronto. His death was the result of a paralytic stroke. He graduated in Medicine many years ago, from Toronto University.

Dr. J. W. Hayes died at his father's residence in Peterboro, following an illness of eighteen months. In 1915 he graduated in Medicine at Toronto University. For a year he was house surgeon at St. Michael's Hospital and in 1916 he took a post-graduate course in surgery at the New York City Hospital. On his return he went back to St. Michael's Hospital and became clinician on the staff of Toronto University.

Miscellany

News

MARITIME PROVINCES

THE Cape Breton Medical Society was reorganized at a meeting held in the county house, Sydney.

The following officers were elected: President, Dr. E. W. Johnstone; vice-president, Dr. J. W. McLean, North Sydney; secretary-treasurer, Dr. J. B. G. Lynch, Sydney.

Executive: Dr. L. Johnstone, Sydney Mines; M. T. McLean, North Sydney; J. J. Roy, Sydney; M. T. Sullivan, Glace Bay; and D. J. Hartigan, New Waterford.

THE annual meeting of the Prince Edward Island Medical Society was held July 9th, Dr. Dewar, the president, presiding.

Case reports were presented by Dr. J. McNeil and Dr. Warburton.

A very interesting address was given by Colonel (Dr.) R. H. McDonald, D.S.O., who spoke on surgical experiences in France. The following officers were elected for the ensuing year: President, Dr. J. F. McNeil, Summerside; vice-presidents, Dr. A. A. McDonald, Dr. Champion, Dr. McGuigan; secretary, Dr. Yeo (re-elected); treasurer, Dr. McMillan, (re-elected); executive committee, Dr. A. Murchison, Dr. Lauton, Dr. McInty.

HON. D. ROBERTS, Minister of Public Health for the Province of New Brunswick, read a paper at the recent Quebec Medical Convention on contagious diseases, especially dealing with smallpox. Dr. Pagé said it cost the New Brunswick Government, $125,000 to enforce vaccination, and by the efforts of Dr. Roberts, 40,000 persons were vaccinated.

QUEBEC

PHYSICIANS in Quebec are giving warning of the danger of germs of communicable diseases being brought over from Europe

in the baggage of the returned soldiers. Local health authorities in Canadian communities should not let this go unheeded.

Dr. J. G. Page, Immigration Health Inspector at the harbour of Quebec, says the Press should give the greatest publicity to outbreaks of smallpox, and other contagious diseases, so that the public can be aroused to the danger and help in the cause of prevention by encouraging public vaccination, and quarantine regulations.

Recently Dr. P. Martineau, superintendent of the Quarantine Station, forty miles below Quebec, ordered one of the large incoming troopships detained longer than expected, and sent a special boat to Quebec to bring a large quantity of vaccine.

The annual apportionments distributed among the different Montreal hospitals were announced at a meeting of the Administrative Commission.

The sums distributed appear on the budget for 1919 as follows: Notre Dame Hospital, $4,000; General, $4,000; Hotel Dieu, $2,000; Western, $1,300; Homeopathic, $100; Woman's, $100; St. Justine's, Children's, $2,200; Foundling and Sick Baby's, $800; Children's Memorial, $500; Montreal Maternity, $500; Sisters of Mercy Maternity, $500; Sisters of Mercy Creche, $2,000; Grey Nun's Creche, $1,500; St. Paul's Creche, $2,000; St. Joseph Convalescent, $250; The Loyola Convalescent, $250; Herzl Hospital and Dispensary, $500; Montreal Dispensary, $500; Bruchesi Institute, $3,000 (Tubercular); Royal Edward Institute, $3,000; Mount Sina Sanatoriam, $3,000; Grace Dart Home, $600; Montreal Diet Dispensary, $200;

Dr. S. Boucher, director of the Health Department, has been appointed by the Administrative Commission, a member of the Board of Health, and Medical Health Officer of the City of Montreal, with all the power appertaining by law to this office.

Final arrangements were completed by the provincial health bureau for their annual vaccination campaign among school children, and circulars were sent out last month to all school boards, municipalities and congregations, stating that it was compulsory that every child entering school has to be vaccinated at least once for the younger ones, and within seven years for the older ones.

The enforcement of compulsory vaccination is being accepted with decreasing reluctance each year, the health officers report, and to that fact is attributed the decrease in smallpox throughout the province.

At Ottawa recently the Medical Council of Canada remained in annual session for three days. Hon. Dr. Roche, Chancellor of Western University, Dr. L. DeL. Harwood, Dean of Laval in Montreal, and Dr. N. E. McKay, of Halifax, took their seats for the first time this session. The council is composed of thirty-two representatives.

This year it was under the presidency of Dr. R. E. Walker, of New Westminster.

One important matter of business was the decision of British Columbia to relinquish the local provincial examination for their license in favour of the examinations as set by the Medical Council of Canada.

Another important matter was discussed, viz.: the re-introduction into the act of powers to negotiate with Great Britain and other countries looking towards reciprocal acknowledgements of license. The opinion is held that Canada as a whole is strong enough to assert her position in matters involving medical training and should be dealt with as a whole instead of through provinces, as now obtains. Examinations were ordered in Montreal and Halifax in October, 1919, and in Toronto, Winnipeg and Vancouver in June, 1920, the object being to facilitate candidates taking the examinations at as little expense as possible. The new President is Dr. J. C. Donnell, the Dean of Queen's Medical Faculty. The Vice-President is Dr. McNeill, of Summerside, P.E.I. The Honorary President is again Sir Thomas Roddick, of Montreal, Dr. R. W. Powell, Ottawa, is registrar, and F. H. Chrysler, K.C., of Ottawa, is general counsel.

ONTARIO

The recent report of the Provincial Board of Health, June, 1919, shows an increase in the number of cases of smallpox, scarlet fever, diphtheria, and tuberculosis, over the number reported in June, 1918.

The comparative figures of these four diseases are: June, 1918; smallpox, fifteen cases, no deaths. Scarlet fever, one hundred and ninety-six cases, four deaths. Diphtheria, one hundred and twenty-six cases, thirteen deaths. Tuberculosis, one hundred and seventy-two cases, one hundred and forty-seven deaths.

In June, 1919, there were sixty-nine cases of smallpox, and two deaths. Three hundred and ten cases of scarlet fever and

six deaths. Two hundred and seventy-three cases of diphtheria and twenty-five deaths. Two hundred and twenty-eight cases of tuberculosis and one hundred and eighty-three deaths.

Smallpox is most prevalent in the township of Harwich where eighteen cases have been reported, with one death. Guelph reports seven cases, with no deaths. Toronto has one case with no deaths.

Infantile paralysis, this year, shows several cases with five deaths, in comparison with one case and no deaths for the same period last year.

While there are nearly one thousand fewer cases of all diseases reported, the actual number of deaths shows an increase of nearly two hundred.

In June of 1918, there were 2,256 cases reported and 197 deaths.

In June of 1919, there were 1,269 cases and 399 deaths.

At the annual meeting of the Ontario Association for the care of the Feeble-minded the following officers were elected for the ensuing year: Honorary President, Dr. C. K. Clarke, Toronto; president, T. H. Wills, Hamilton; first vice-president, Mrs. A. M. Huestis, Toronto; second vice-president, Sheriff D. M. Cameron, London; third vice-president, Dr. J. H. Putnam, Ottawa; fourth vice-president, Judge Hardy, Brantford; secretary-treasurer, Dr. O. C. J. Withrow, Toronto.

To this was added a strong executive committee, to the number of twenty-six.

ANNOUNCEMENT has been made by Hon. W. D. McPherson of the appointment of Dr. Harvey Clare to the Medical Director of Ontario Hospitals. The office, a new one, is taken as a forward step in Institutional management.

Dr. Clare is to have general supervision of the medical work in connection with Ontario hospitals. He will furnish the Ministers with reports on the movement, the discharge, and transfer elsewhere of patients, and reports on the equipment, accommodation and furnishing of the institutions.

While the office is a new one, Dr. Clare is already in the Department as an assistant Inspector of Prisons and Public Charieties. Prior to that he was Superintendent of the Toronto Reception Hospital, and assistant Superintendent to the Queen Street Toronto Hospital for the Insane.

AT a recent sitting of the Ontario Medical Council, an important motion was passed.

It was moved by Dr. E. E. King, of Toronto: "That all doctors having but one year's practice before enlisting in the Army be compelled to take a six months' post-graduate course, and that the Government give them a grant of $500 to cover expenses."

THE notice of motion by Dr. Stewart condemning the Ontario Temperance Act, on the ground that it made the doctor the only medium between the Government and the Public for obtaining liquor was discussed at length, and it was finally decided by Dr. Stewart to withdraw the motion, on the ground that a referendum was to be submitted on the question soon, and that it would be inadvisable to press the motion at this time.

THE late Senator H. W. Richardson has left a legacy of $100,000 to the Kingston General Hospital for treatment of tuberculosis only. A special wing will be built for this purpose in connection with the hospital enlargement scheme in the interests of Queen's Medical College.

A RESOLUTION was passed recently by the Niagara Falls Council to raise $50,000 toward a hundred bed hospital to cost $100,000.

Public subscriptions are to meet the rest of the amount.

THE Toronto Bulletin takes a strong position on the housing problem. A recent survey by the Department of Health found that 13,574 single houses visited gave shelter to 18,123 families. In all 8,000 dwellings were found to be overcrowded.

The Bulletin points out that Toronto should have at least 5,000 additional houses for working men and their families before winter sets in, and draws attention to the very serious situation confronting the city.

DR. G. ADAMS, who for the past eight years has filled the position of epidermiologist in the Toronto Health Department, has been appointed Health Officer in the Essex Health District. Dr. Adams is not only familiar with all branches in public health matters, but is also an excellent administrator.

THE proposition to grant $50,000 for hospital work in the

County of Huron has been endorsed by the County Council Sessions from several quarters.

The sum is a proposed increased for general purposes.

A RESOLUTION presented by Dr. Clarke, of Goderich, calls for the division to be as follows: Goderich and Wingham, $15,000 each; Clinton, $10,000; Seaforth and Exeter $10,000 each.

There are now no hospitals in Seaforth and Exeter.

The division referred to was in accordance with the request of a deputation which presented their claim to the council.

BRITISH COLUMBIA

How to finance the hospitals of British Columbia was one of the questions under vigorous discussion at the recent Convention. After the matter has been considered at greater length by the Medical Association of Vancouver and Victoria a resolutions committee will undoubtedly come to some decision for a conference with the Government.

Mr. J. J. Banfield, a member of the Board of Directors of the Vancouver General Hospital, introduced the subject.

The Provincial Government, it was recommended, should take over the total expenditure of the hospitals and schools and make them provincial institutions.

The levy or a special tax in the case of the hospitals, about six dollars per year levied on all persons between the ages of eighteen and fifty would meet the requirements in British Columbia.

Most of the ninety-four hospitals in the province had government support. Although about 1,500,000 dollars per annum was contributed, the government made no provision for checking up separately the measure of their efficiency.

Under government control all institutions, large or small, would be under uniform government control.

Standardization was also a desideratum Through standardizing a much greater efficiency could be attained. The service must also be standardized and every department in the hospital.

The idea of State hospitals with absolutely free treatment was definitely opposed by Dr. Vrooman of Vancouver. Wherever tried the experiment had not been the success promised. Other speakers thought the question demanded greater consideration and that the medical profession had not been allowed time to think over the matter and express an opinion.

WESTERN NEWS

THE University of British Columbia has established a Department of Nursing and those nurses taking a full course of both academic and practical training will be granted a degree in nursing. The department is to be established in connection with the Faculty of Science; the admission—matriculation or equivalent, at the discretion of the Senate. University training, two years in arts, practical work can be taken in any hospital that comes up to the standard set down by the university authorities, and such hospital will make formal application and submit evidence of fitness. Hospital graduate nurses may be awarded the degree by complying with such conditions as may be laid down by the Senate, and the Medical Council of British Columbia will be asked to draw up a standard of qualifications for the guidance of the Senate in reference to proposed hospital requirements.

Two hundred and fifty Saskatchewan returned soldiers are on the strength of the Department of Soldier Civil Re-establishment for medical or surgical treatment as the result of the recurrence of war disabilities. This announcement was made by Dr. W. C. Arnold, head of medical services for the department in this province. Of the total number on the strength for treatment one hundred and ten are tubercular.

THE Daughters of the Empire have planned the erection of a children's wing to Qu'Appelle Sanitarium. There is as yet no children's pavillion in this province for the care of tuberculous children, but the splendid efforts of the I.O.D.E. in coping with the white plague is evidenced in the King Edward Cottage, erected at the Sanitarium at Ninette, Manitoba, and the Preventorium at North Toronto conducted under their auspices. Dr. R. G. Ferguson, superintendent of the Qu'Appelle Sanitarium, in a series of addresses recently given to the Order asserted that to give children the fullest measure of curative treatment they should be separated from adults. He spoke of having visited various hospitals in Canada and the United States where tubercular children were treated and the results were indeed wonderful, especially in bone, gland, and pleurisy cases, where the sun cure was used most effectively.

MEDICAL COLLEGES

W. B. GRAHAM, registrar-treasurer of the Ontario College of Pharmacy, reports this year there will be accommodation for one hundred and forty-one students. Despite the fact that all the seats have been applied for, the management continue to receive applications, and in the event of any member failing to accept his seat, it will be filled by those on record in the waiting list.

The school opens on September 4th. Six women students have registered. Eleven members were elected to the council of the Ontario College of Pharmacy for the next two years. The results of two elections to decide on representatives for districts number 3 and 12 will be announced on August 7th.

The council elect will meet on the third Monday in November when they will choose their president and other officers.

DR. R. C. DEARLE has been appointed to the Chair of Physics in Western University. He succeeds Dr. Ernest Baker, who has resigned, to take up duties in research work in the Government Laboratories at the University of Michigan.

Dr. Dearle graduated at Toronto University, receiving his B.A. degree in 1914 and M.A. degree the following year.

The degree of Ph.D. was conferred upon him last month by Toronto University.

THE clinical work of Queen's Medical College will eventually be transferred to Ottawa, when the new hospital is completed, as the small population of Kingston makes the supply necessarily inadequate.

THE new physics building at the University of Saskatchewan will be work done along advanced scientific lines. It will contain an auditorium with a seating capacity of two hundred, two laboratories, one with a seating capacity of thirty-four. Class rooms for electric and phonometric work

TORONTO UNIVERSITY inaugurates a Special Course on August 15th, for doctors who have been overseas.

It will extend over a period of six weeks.

ARMY MEDICAL SERVICES

THE Distinguished Conduct Medal has been awarded to: L. F. Allingham, 2nd Field Ambulance, C.A.M.C.; H. H. Chaplain, C.A.M.C., J. C. McKinnon, 3rd Canadian Field Ambulance, C.A.M.C.; W. D. Foran, attached to 1st Field Ambulance, C.A.M.C. H. D. Moses, 7th Cavalry Field Ambulance, C.A.M.C.; J. F. M. Johnstone, attached to 4th Field Ambulance, C.A.M.C.

ELMER DICKINSON, Medicals, C.A.M.C., was awarded the Military Cross at a recent investiture at Buckingham Palace.

THE Royal Red Cross has been awarded to a large number of Canadian Nursing Sisters. The list follows: Nursing Sisters Sarah P. Johnson, Amy E. MacMahon, Helen L. McIntosh, Matron E. F. Pense, Matron Lucy G. Squire, Nursing Sister Flora H. Wylie. Royal Red Cross (2nd class): Nursing Sisters Sarah Archard, C. P. Arnoldi, Katharine E. Bardon, Leila Bready, Evadne K, Cotter, Gertrude C. Cressewell, Evangeline L. Emsley, Mary E. Engelke, Annabel J. Fraser, Jessie M. Gent, Gertrude E. Halpenny, Alice E. Hindley, Margaret Johnston, Margaret Leamy, Carolyn J. Little, Katharine A. MacLeod, Mary A. MacNaughton, Mary McPherson, Rachael McConnell, Louise S. McGregor, Minnie MacInnis, Myrtle MacMillan, Harriet T. Meiklejohn, Emma G. Moore, Minnie E. Misner, Eva L. Morkill, Isabel B. Forbes Muir, Elsie S. Nicholson, Kathleen Ponton, Marion E. Price, Ethel G. Saunders, Alice M. Stewart, Mary Catharine Stewart, Agnes Sutherland, Annette M. Tate, Ada A. Taylor, Alice G. Turner, Marjorie M. Webb, Margaret J. Woods, Helen J. Woolson.

THE Bar to the Royal Red Cross has been awarded to Matron Evelyn Wilson.

To replace Lt.-Col. F. McKelvey Bell, who recently resigned his position as Director of Medical Services for the Department of Soldiers' Civil Re-establishment, the appointment has been made of Col. E. G. Davis, C.M.G., M.D., as Acting Director. Col. Davis went overseas in 1915 as a junior officer with No. 3 General Hospital. He was sent out to the Island of Lemnos in the Mediterranean, but later was recalled to England, where he was appointed Colonel and sent to France to take charge of a hospital at Doullens. Recalled again, he was made Officer Commanding the Shorncliffe Military Hospital. During his service overseas he was twice mentioned in despatches, and was awarded the C.M.G.

in recognition of his services and ability. Since his arrival in Canada Col. Davies has been A.D.M.S. at Regina, and has served as Unit Medical Director for the Department of Soldiers' Civil Re-establishment at Montreal.

THE Medical Units organized or reorganized by the Canadian Army Medical Services during the year 1917 in the United Kingdom were, as stated in the Progress Reports of the C.A.M.C., as follows: Ten general hospitals. Eight special hospitals. Six convalescent hospitals. One ship hospital. Two laboratory units. Four sanitary sections. One central medical store. Two advance depot medical stores. One regimental depot and training school. Two administrative units. D.M.S. branch and A.D.M.S., London area. In this reorganization hospital expansion was effected as follows: Canadian Military Hospital, Basingstoke, 1,040 beds, projected to have 2,500 beds. The net total expansion above is 11,432 beds. The total Canadian Hospital capacity is now (at the end of 1917) 19,950 beds.

THE International committee of the Red Cross announces that the central bureau founded in Vienna to fight epidemics in Central Europe, includes delegates from Poland, German-Austria, Hungary, Jugo-Slavia, Ukraine, Czecho-Slovakia, and Roumania. The bureau proposes, by means of contributions from the states interested, to assemble a fund for the purchase of medical necessities, coordinate the efforts of the governments, establish a sanctuary cordon and generally interest the whole of Europe in the dreadful plights of the peoples who are being decimated by epidemics. The sub-committee which is directing the undertaking has conferred with Sir David Henderson, director-general of the League of Red Cross societies, who declares that the establishment in Geneva of the capital of the League of Nations, will greatly facilitate joint national action.

THE MEDICAL SOCIETY OF NOVA SCOTIA

THIS Society held its sixty-sixth annual meeting at Antigonish on July 2nd and 3rd, under the Presidency of Dr. George H. Murphy of Halifax. Colonel F. S. L. Ford, C.M.G., C.A.M.C., of Liverpool, was first vice-president, and Dr. J. J. Roy, of Sydney, second vice-president.

The meetings were held in the science building of the University of St. Francois Xavier. The Society is greatly indebted to the University authorities for this courtesy.

The first paper was an account of two cases of Hæmaturia, under the care of Dr. Philip Weatherbe of Halifax. Both were infections due to the bacillus coli. In one the patient was a boy who had had his vitality lowered by pressure from excessive abdominal massage by an osteopath some time previously to the case being seen. This case recovered by appropriate drugs. In the second case there were multiple foci, and the kidney had to be excised.

The second paper on "The surgery of the stomach", by Dr. A. J. A. Hamilton, of Boston, was illustrated by *x*-ray photographs which helped very much to elucidate the one hundred cases in which gastro-duodenostomy or gastro-jejunostomy had been performed. This paper gave rise to an interesting discussion.

The first paper at the afternoon session was on "The surgery of the chest", by Lieutenant-Colonel F. A. C. Scrimger, V.C., C.A.M.C., of Montreal. This paper described conditions seen during Colonel Scrimger's long experience at the War. It elicited a lengthy and instructive discussion. The second paper was contributed jointly by Major L. R. Morse, C.A.M.C., in charge of the *x*-ray department at Camp Hill Hospital, Halifax, and by Dr. Arthur Birt, in charge of the medical cases there. A large number of conditions in œsophageal, gastric, cardiac, and renal disease were carefully described. The third paper was on the "*X*-ray diagnosis of pulmonary tuberculosis", by Dr. R. J. Collins, of the Nova Scotia Sanatorium, Kentville. It discussed the interpretation of the skiagraphs in the light of clinical findings.

At the evening meeting, to which the public were admitted, the town was represented by the Deputy-Mayor, and the University by the Rector, the Rev. Dr. MacPherson.

In the presidential address, Dr. Murphy dealt with the relations of the medical profession to such topics as venereal diseases, prohibition and the educating of the laity in regard to a public health conscience. The address which had a fine literary flavour, was listened to with much attentive appreciation, and is published in this issue.

Dr. W. H. Hattie, Principal Medical Health Officer for Nova Scotia, followed with a valuable and thoughtful paper on "Mental Hygiene", which was really a plea for active intelligent prophylaxis in mental disorders, actual and possible.

The last paper for the evening was "The medical profession as a state service", by Professor D. Fraser Harris, of Dalhousie University. It consisted of a sketch of the methods whereby the physicians and the medical officers of health may both become

civil servants, salaried, pensioned, rewarded, decorated, etc., as such. The hospitals and universities all become State institutions, and all medical graduates enter the State Medical Service, and all by one portal. Irregular practitioners and the dupes of pseudo-science are exposed and eliminated. Medical research, all laboratories, the nursing profession, dentistry, and all therapeutic specialisms, pass under the control of the experts of the State Medical Service. It is to be self-supporting and self-administering. This is neo-socialism or co-operationism, the organizing of the expert few for the benefit of the many, as in the late War. The service could be financed partly by taxation for the public health in lieu of taxes for navy and army no longer needed on the huge scale of the past, and partly by the State become trustee for the endowments of hospitals and schools of medicine.

On July 3rd, the morning session was opened by a lucid and condensed exposition of the idea of workmen's compensation in relation to the medical profession, by Dr. M. D. Morrison, Halifax, Chief Medical Officer, Workmen's Compensation Board of Nova Scotia.

Lieutenant-Colonel J. A. Sponagle's paper on "A plea for an extension of our hospital system in Nova Scotia", was listened to with much interest. It advocated increasing the usefulness of the hospitals of the province in order to make them centres for the care and cure of a much larger number of persons than at present. It was the rural population that especially needed hospital benefits, that at present least received them.

The paper by Dr. M. E. McGarry, Margaree Forks, N.S., dealt with "The present tendency to minimize the importance of drug therapeutics". This was a valuable and timely contribution. The author pointed out that too much dependence should not be put on the results of experimentation with certain drugs on the lower animals, inasmuch as some animals reacted to some drugs differently from man. The author urged that clinical experience with drugs, although "empirical", is a safer guide than laboratory results in some cases.

Dr. A. H. Gordon, of Montreal General Hospital, gave the last paper, which was on "Abscess of the lung". The author dwelt particularly on the difficulties of diagnosis in these cases, and illustrated his remarks with lantern-slides of skiagrams of pulmonary abscess and empyema. In some cases, the clinical history was correlated with the post-mortem findings. The paper, which was fully appreciated, gave rise to a useful discussion.